NX242 Digital TDcontroller

Service Manual

Declaration of conformity

This equipment has been tested and found to comply with the safety objectives and essential requirements of European (73/23/EEC and 89/336/EEC directives) and international Standards, by fulfilling the requirements of the following harmonized standards:

Electrical Safety (EU) : IEC 60065 (12/2001) Audio, video and similar electronic apparatus

Electrical Safety (US) : UL60065 Seventh Edition, dated June 30, 2003 category AZSQ, E241312.

Electrical Safety (CAN) : CSA-C22.2 N°60065:03 Edition, dated April 2003 category AZSQ7, E241312

Electrical Safety (Rest of the World) : CB test certificate DK-8371 based on IEC60065-2001 7nd ed. with all national deviations.

Radiated Emission (EU) : EN55103-1 (1996) Electromagnetic compatibility - Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use.

LISTED
Audio Equipment
10CE

Radiated Emission (US) : FFC part15 class B

Radiated Emission (CAN) : This Class B digital apparatus complies with Canadian ICES-003.

RF Immunity (EU) : EN55103-2 (1996) Electromagnetic compatibility - Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use.

Note: EMC conformance testing is based on the use of recommended cable types. The use of other cable types may degrade EMC performances.

IMPORTANT SAFETY INSTRUCTIONS

1) Read these instructions.
2) Keep these instructions.
3) Heed all warnings.
4) Follow all instructions.
5) Do not use this apparatus near water.
6) Clean only with dry cloth.
7) Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8) Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9) Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet. (US market)
10) Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11) Only use attachments/accessories specified by the manufacturer.
13) Unplug this apparatus during lightning storms or when unused for long periods of time.
14) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

Information about products that generate electrical noise :

NOTE: The United States Federal Communications Commission (in 47 CFR 15.105) has specified that the following notice be brought to the attention of users of this product:
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The user may find the following booklet, prepared by the Federal Communications Commission, helpful: How to identify and Resolve Radio/TV Interference Problems. This booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402, Stock No. 004-000-00345-4. Use of a shielded cable is required to comply within Class B limits of Part 15 of FCC Rules. Pursuant to Part 15.21 of the FCC Rules, any changes or modifications to this equipment not expressly approved by NEXO S.A. may cause, harmful interference and void the FCC authorization to operate this equipment.

The lightning flash with arrowhead symbol, within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

WARNING: To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

To avoid electrical shock, do not remove covers.
Dangerous voltages exist inside.
Refer all servicing to qualified personnel only.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING ! This appliance is a CLASS 1 apparatus and must be earthed.

The green and yellow wire of the mains cord must always be connected to an installation safety earth or ground. The earth is essential for personal safety as well as the correct operation of the system, and is internally connected to all exposed metal surfaces. Additional recommendation for interconnection to other equipment can be found in the FOREWORD at the beginning of this manual

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Foreword

CAUTION !

This servicing instruction is for use by qualified service personnel only. To reduce the risk of electric shock do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

Safety instruction

Mains Power

WARNING ! THIS APPLIANCE MUST BE EARTHED.

The green and yellow wire of the mains cord must always be connected to an installation safety earth or ground. The earth is essential for personal safety as well as the correct installation of the system, and is internally connected to all exposed metal surfaces. Any rack framework into which this unit may be mounted is assumed to be connected to the same grounding circuit. (see also p.4)

NEXO TDcontrollers don't provide a mean to switch off the unit from the front panel. As they are intended to be rack mounted the back panel is not accessible during use. Therefore it is left to the user to provide a disconnection mean readily operable.

Voltage setting

NEXO TDcontrollers use a switch mode power supply (SMPS). This SMPS accepts universal AC power input voltages in the range 90V to 264V, and requires no manual adjustment for voltages in this range.

Mounting the TDcontroller in a rack (Grounding, shielding & safety issues)

The TDcontroller is intended for rack mounting. The only accessible part during use shall be the front panel of the TDcontroller. Any space above or under the TDcontroller shall be obstructed with a blank panel.

The rack is a free grounding and shielding structure and it provides extra shielding. Therefore, it is desirable that the screws used to fix the TDcontroller in the frame or rack provide an electrical contact between the chassis of the TDcontroller and the rack.

The primary reason for grounding is safety. Conformance to the applicable requirements of the authorities having jurisdiction is, of course, mandatory. However, grounding also has an impact on electromagnetic compatibility. From the EMC point of view, it is desirable to have a low impedance ground network, as a current flowing in the ground network will then produce low voltage in the network. A low impedance network can be obtained using a multipoint ground scheme, with as many closed ground loops as is economically possible.

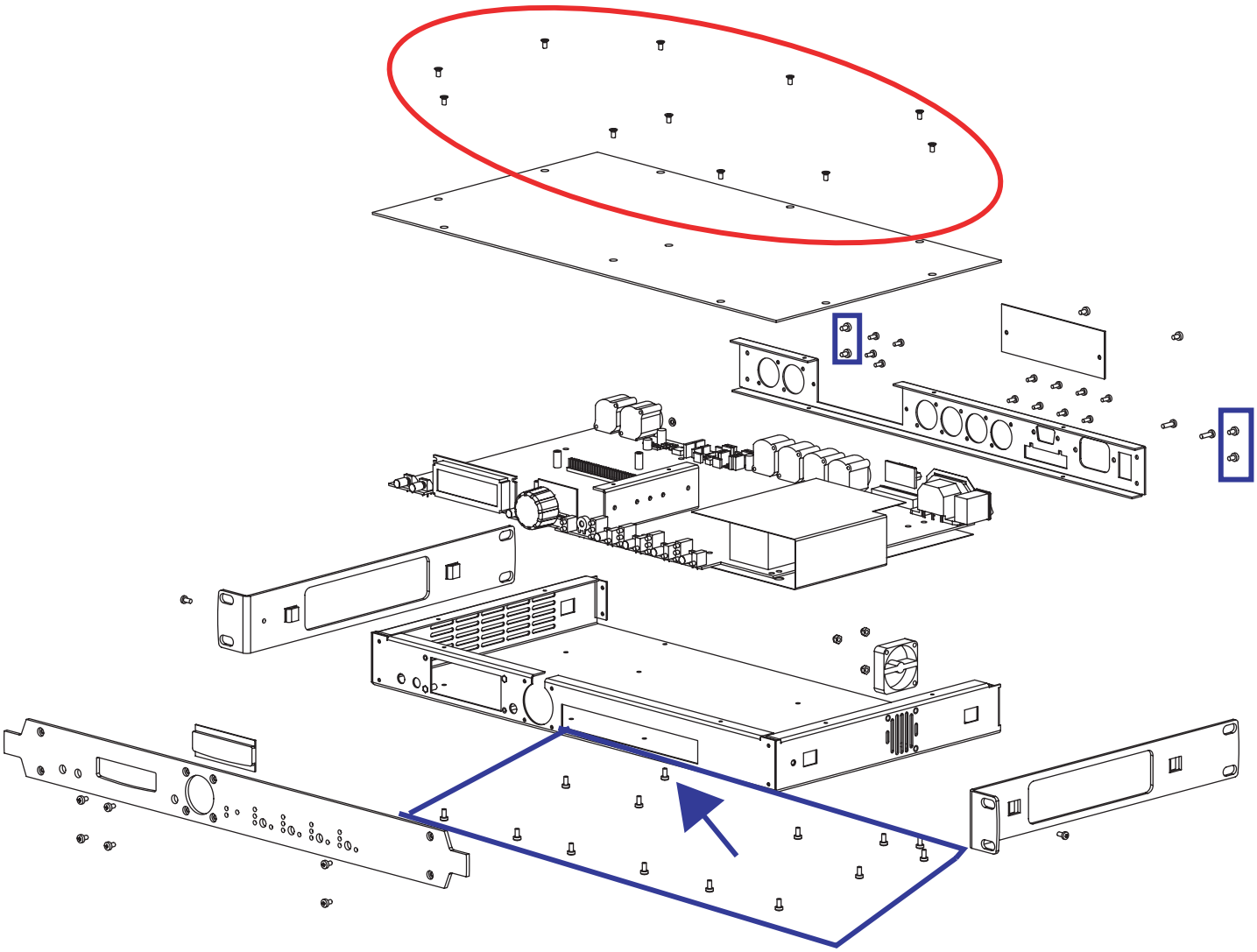
Fuse

The fuse provided in the unit will not blow during normal operation. If the fuse blows the TDcontroller has malfunctioned. This fuse must only be changed by NEXO certified service personnel. In any case do not replace the fuse with a non-certified NEXO fuse, as this will invalidate the NEXO warranty.

History

Partlist	PCB ref	note	S/N	Date
V1.0	NX242 V1.8	initial		
	NX242 V2.0	Minor points fixed for UL approval		

Mechanical issues



Removing the top panel

First be sure that the NX242 is disconnected from the mains. Wait 5 minutes to discharge the capacitors

To remove the top panel; unscrew the 11 screws circled in red in the above drawing (POZIDRIVE screwdriver). When replacing the top panel pay attention to the 2 screws which are above the aluminum heatsink. They should be screwed with a lesser torque than the other to avoid damaging the aluminum threading.

WARNING: Some of the NX components are sensitive to electrostatic discharges. Be sure to firmly hold the chassis of the NX242 before touching any component inside. Always keep contact with the chassis to prevent electrostatic discharge. If possible, use non-magnetic tools.

Removing the PCB

The remove the PCB; unscrew the 14 screws in blue square (POZIDRIVE screwdriver). Warning : the screw pointed by the arrow is smaller than the other. It must be replace at the very same place to avoid so short circuit problem (affecting slightly the overall dynamic range) on PCB v1.8

Hardware problem on NX242 s.n. 3880 to 4049

Abstract

This document deals with a hardware problem that can be found on any NX242 from serial number 3880 to 4049.

The symptoms of this failure is the following:

- Crackles on the outputs patched on the A Input of the NX242 that can be very audible.
- Blinking of the Sense green LED even without amplifier connected.

Please note that in case of emergency it is always possible to use the B input of the NX242 that does not present noise.

Also note that in most of the cases, the noise disappears after a few minutes (after the NX warmed up).

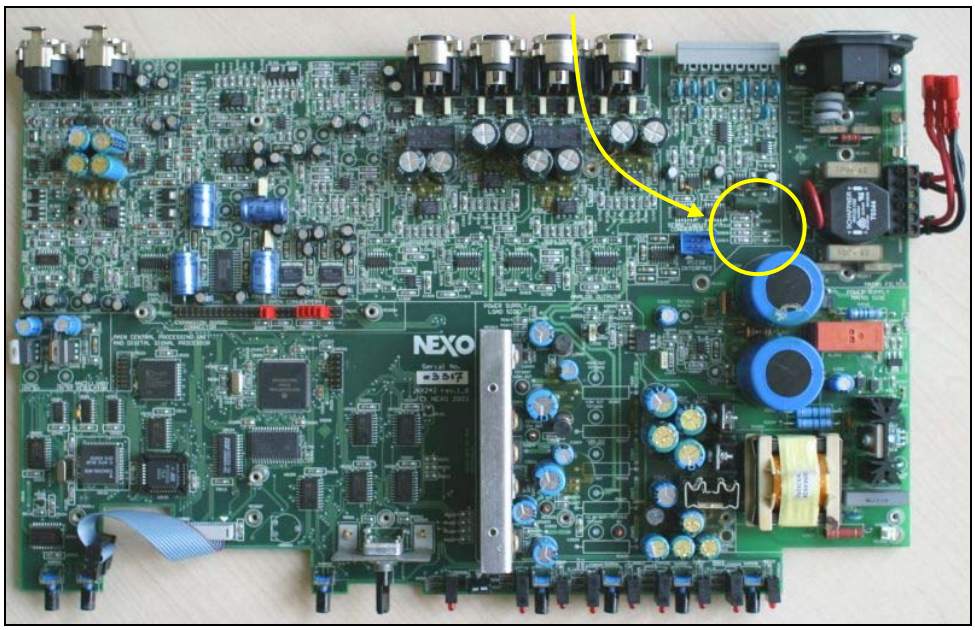
The solution to solve this problem is to remove faulty capacitors on the NX242 PCB.

Hardware correction

Finding and removing the C1516 component

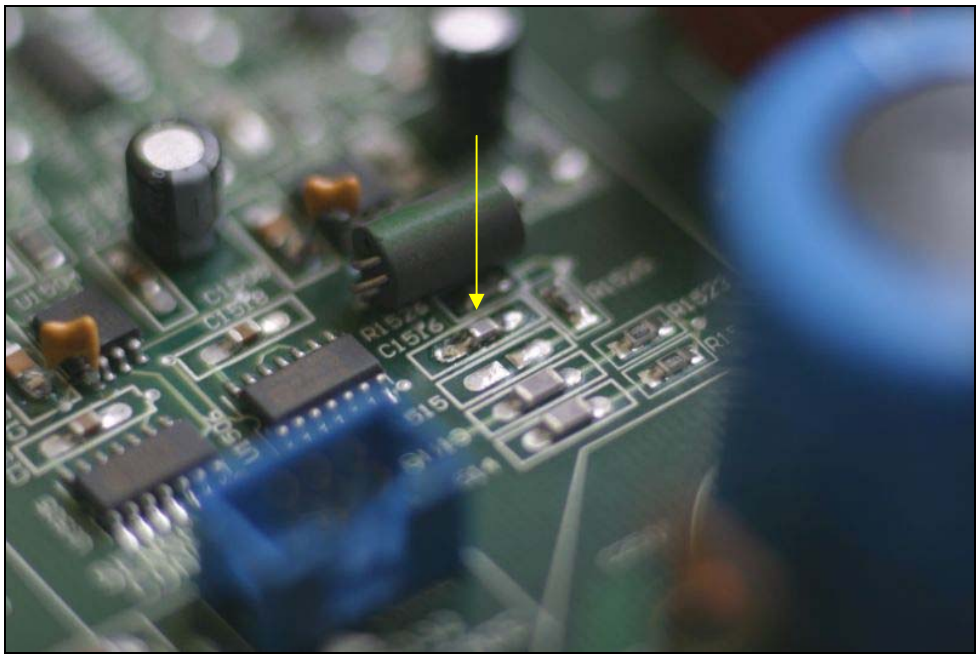
The C1516 component has been soldered on a few NX242 from serial number 3880 to 4049. In most of the cases, this component is not present on the motherboard. If not, please go on to the next chapter.

Locate the C1516 component inside the NX242.



The C1516 is a SMD capacitor.

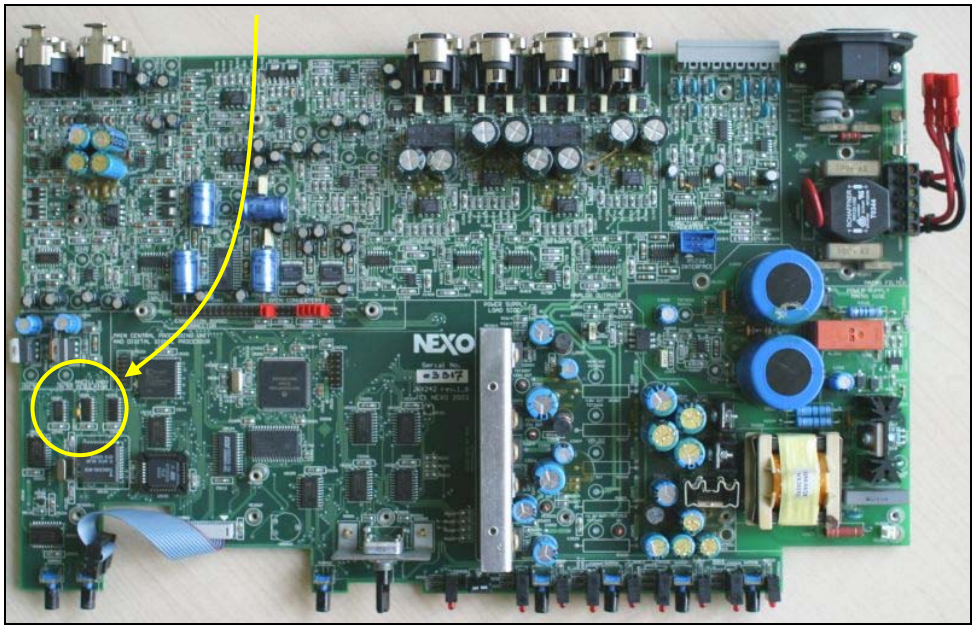
Here is a closer look on the C1516 component, near the connector for the RS-232 Interface.



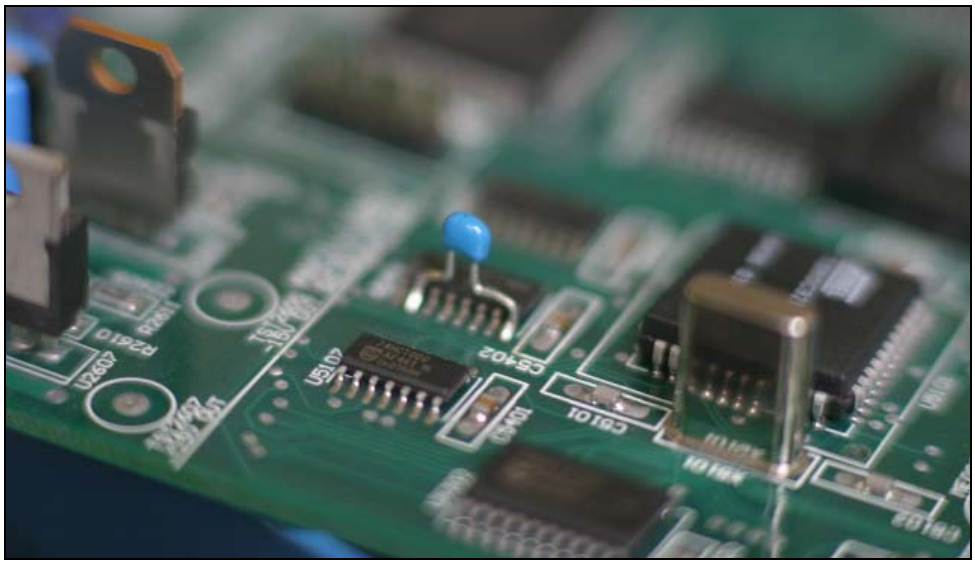
Remove this component with a soldering iron. Be sure to let a clear path between the two pads of the PCB. The footprint should look like the footprint of the component C1515 just bellow.

Finding and removing the “Flying” capacitor

First of all locate the Flying capacitor, on the picture bellow:

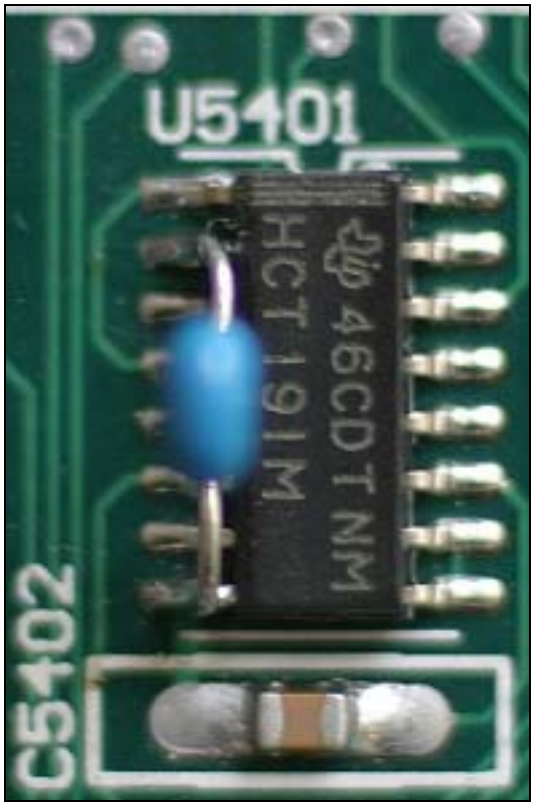


Now have a closer look on the component U5401. This component has a traditional capacitor, that can be blue or orange soldered between the pin 2 and the pin 8, as you can see on the picture bellow.



Please note that the color of the capacitor has no importance.

Now, please check the manufacturer of the U5401 component. From NX242 serial number 3200 to 3879, the component should be a Texas Instrument, and from serial number 3880 to 4049, the component should be a Philips. Here are two pictures of the possible manufacturer:



The Texas Instrument component:

The Philips component:

Only if you have a Philips component, you have to remove the added capacitor

You can unsolder the capacitor, or simply cut the legs as near as possible to the legs of the Philips component.

If you have a Texas component, you must have the capacitor between the pin 2 and the pin 8 of U5401.

Once this operation is finished, replace the cover of the NX242, with all of the screws, as they are important for the shielding of the digital section of the controller. When you power up the unit again, it should boot normally, and none of your settings should be lost. Check that the noise has disappeared on all the outputs (be sure to check the input A of the controller).

Hardware fix for the Nxtension-CAI and the Nxtension-ES4

Abstract

This document deals with a hardware problem that can be found on Nxtension card with:

- Serial number up to 695 for Nxtension-ES4
- Serial number up to 299 for Nxtension-CAI

The symptoms of this failure are the following:

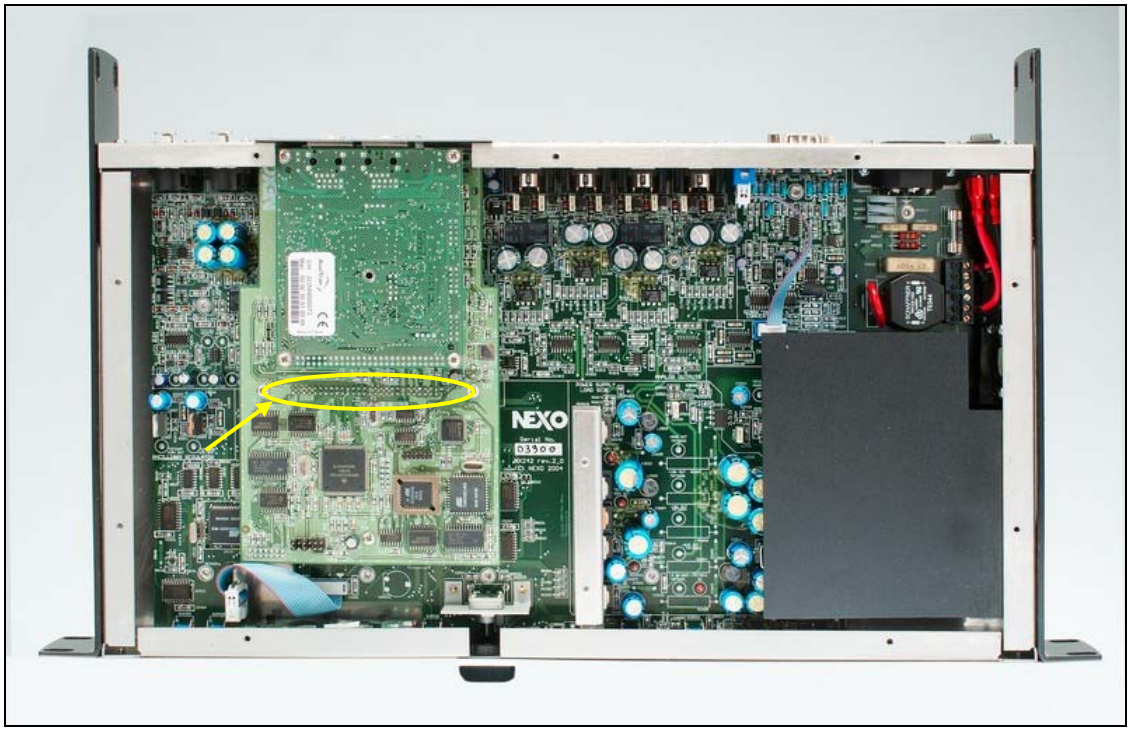
- Crackles or noise on all the outputs that can be permanent or punctual.
- When using an Nxtension-ES4, the noise disappears when switching from Analog to Digital input.

Also note that this problem mostly occurs with Nxtension-CAI cards.

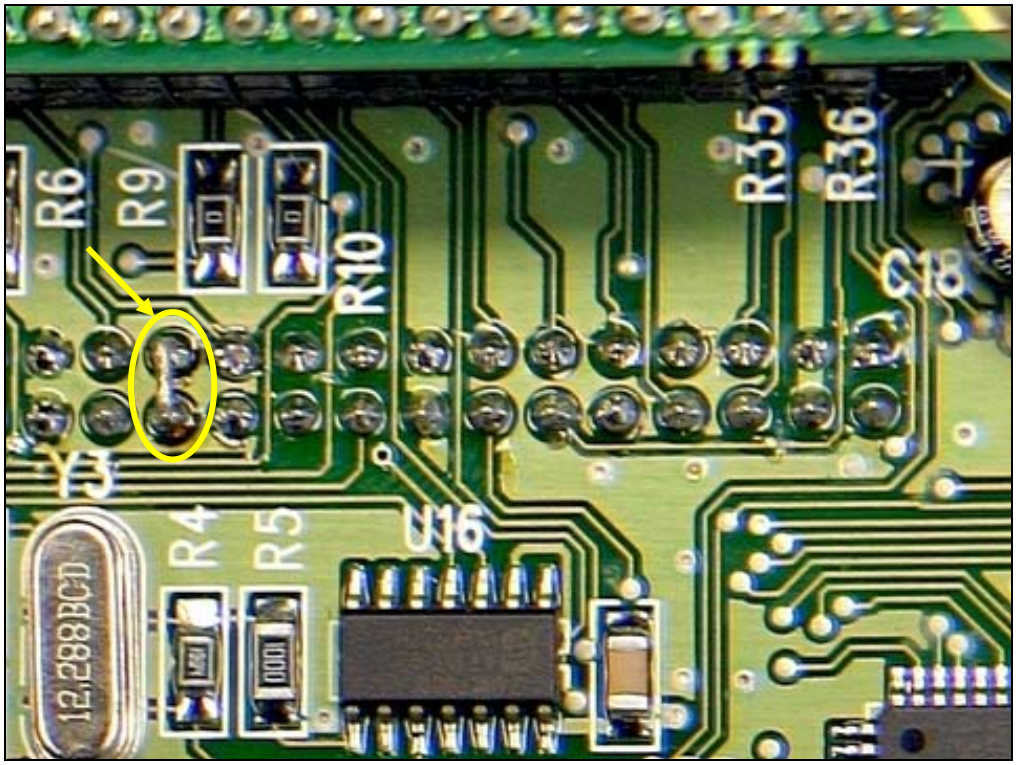
The solution is to connect to a fixed potential a pin on the Nxtension board which was left floating.

Hardware correction

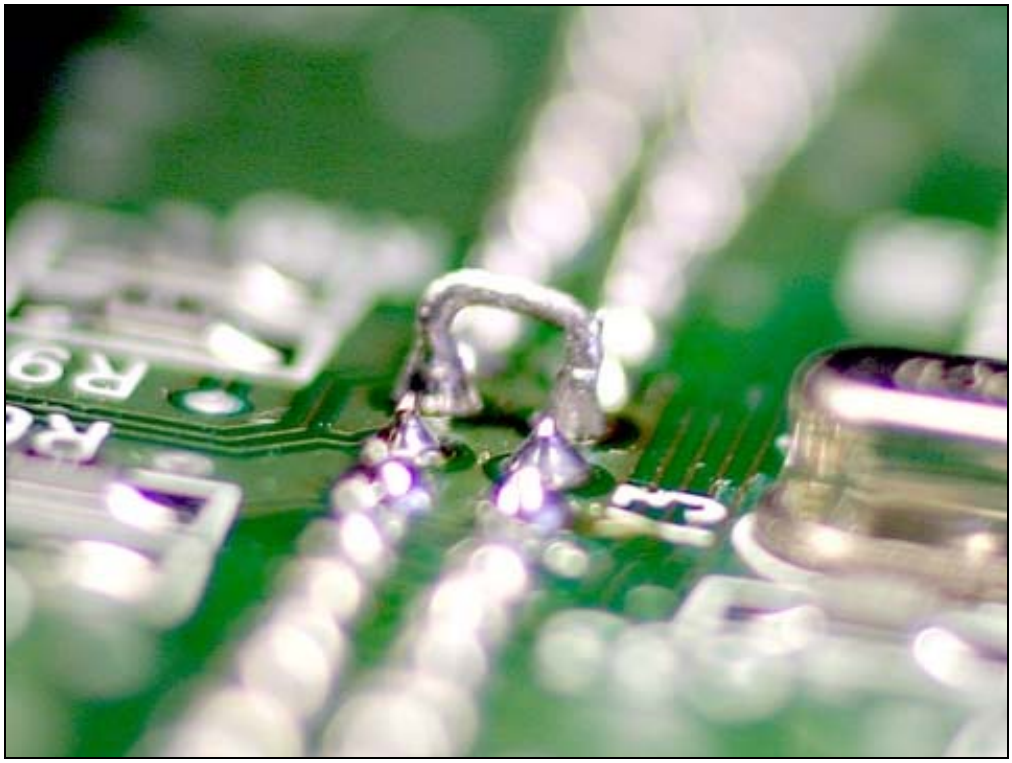
First and foremost, be sure to disconnect the NX242 from the mains before opening the top cover. Once the top cover of the NX242 is open, you can directly do the hardware correction on the Nxtension-board itself.



Then locate the large header on the Nxtension card like on the picture above. On this header, you will have to solder a jumper between two pins (one next to the other). These two pins are located 17 pins from the left or 12 pins from the right (see the picture bellow).



Bellow is a side view of the soldering: a hard wire is the best solution has it will be less sensible to vibration.



Once it is done, screw the cover back, and check that the NX is booting normally. Check that the audio is passing through without any problem.

Part list

Critical components

Due to the UL and CB scheme certifications the components marked ⚠ shall never be changed with an equivalent part (unless stated in the list below). In case of failure, the exact same type and reference shall be used. Failing to do so will void the warranty and the UL responsibility and certification.

PCB reference	Qty					Reference
			Power Supply			
L2504	1		Choke, high power, Inductance, radial	10	uH	Panasonic - ELC08D100E
Q2502	1		Hexfet Power MOSFET			International Rectifier - IRFBE30
Q2501	1		Transistor power TO-220, TIP50			On Semiconductor - TIP50
D2501 D2506	2		Diode, Ultra fast Power rectifier			Motorola - MURS160T3
D2504 D2505	2		Diode, schottky power rectifier			ST - STPS340U
D2509	1		Diode, Schottky Rectifier, TO220			International Rectifier - 43CTQ100
L2501	1		Choke, EMI suppression, ferrirte core, AXIAL, 800mA, 10%	47	uH	Epcos - B82144A2473J000
L2502 L2503	2		Choke, high power, 1.3A, RADIAL	47	uH	Panasonic - ELC08D47U
D2507 D2508	2		Diode, Rectifier, Utrafast, rugged, SOT78 case			Philips - BYQ28E200
C2604 C2605 C2606 C2607 C2501 C2503	6		Capacitor, Thru Hole, Electrolytic, Radial, 105°C, Low Z, p=3.5mm rating 35V	100	u	BC components - 2222 135 30101
C2521 C2522 C2523 C2524 C2525 C2526	6		Capacitor, electrolytic, Radial, 105°C, Very Low Impedance 470uF 50V (136 RVI) d=12.5mm p=5mm	470	u	BC components - 2222 136 31471
C2514 C2515 C2516 C2517 C2518 C2601 C2602 C2603	8		Capacitor, electrolytic, Radial, 105°C, Very Low Impedance 470UF 16V (136 RVI) d=10mm p=5mm	470	u	BC components - 2222 136 35471
C2505 C2506	2		Capacitor, Non Solid AI-electrolytic, Power long life, Snap in, 100uF, 400V (PLL-SI 059 CASE3030)	100	u	BC components - 2222 059 56101
C2508	1		Capacitor, Thru Hole, ceramic class 2 rating=1000V, p=5,08mm tol 20%	2.2	n	BC components - 2252 601 ..226
C2502	1	⚠	Capacitor, Thru Hole, Polyester MKT Film Capacitor p=22.5mm tol 10%, rating=630V	100	n	Vishay MKT1822-410-63

C0033 C0034	2	Capacitor, EMI suppressor, class X2, metallized paper, 0.1uF, p=20.3mm	0.1	u	Evox Rifa PME271M610M
C0029 C0030 C0031 C0032	4	Capacitor, EMI suppressor, class Y2, metallized paper, 2.2nF, p=10.2mm	2.2	n	Evox Rifa PME271Y422M
C2511 C2512	2	Capacitor, Thru Hole, ceramic low loss class 1 rating 1000V p=5.08mm	47	p	BC component - 2252 561 ..406
R0017 R0026	2	Resistor, Power, 2W, rating 500V, IEC 60115-1 IEC 60115-4	1	M	BC components - 2206 198 03015
TR2501	1	Flyback Transformer	_	_	SIM NX242/01
FUS0001	2	Fuse Holder for diam. 5mm fuse, pitch 5mm			shurter 231683
ME2509	1	Heat sink for TO220 14°C/W of PSTDmk3			
ME2506	1	Heat sink for TO220 20°C/W FROM THERMALLOY REF FARNELL 178-700			
ME2507 ME2508	2	Heat sink for TO220 30°C/W OF PSTDMK3			
ME0015	1	Heat sink with 5 places, without solder mask			Nexo Custom
CN0008	1	AC Inlet			O.HEIL 1001-X-4460
U2604	1	Negative voltage regulator 79XX TO220			ST - L7918CV
U2605	1	Positive voltage regulator LMXX TO220			ST - LM337SP
BR2501	1	Rectifier Bridge, 1A Single Phase D.I.L.			International Rectifier - DF06S
U2602 U2603	2	Regulator, 1A Low Dropout Regulator			National semiconductor - LM2940CT-5.0
U2606	1	Positive regulator 78XX TO220			ST - L7818CV
U2601 U2607	2	Positive regulator type LM317 TO220			National semiconductor - LM317T
	1	Primary switch, double pole,250Vac 10A, 1E4, V-0,category D (GW 805°C)			Arcolectric Switch H8550VB
U2501	1	PWM Controller, Current Mode			Texas instrument - UC3844AD8
D1001 D2601 D2602 D2603 D2604 D2605	6	Rectifier, General purpose			Philips - BYD17G/T1
RL2501	1	Relay DPDT Schrack RT			Schrack - RT424012
U2503	1	Phototransistor optocoupler			Fairchild - CNY17-2.3S
TH0001 TH0002 TH0003	3	Thermistor PTC for overload protection 320mA Vmax=265V			BC Component - 2322 662 53213
VDR0001	1	Varistor, Radial, line voltage operation			Harris/Littelfuse - V320LA40B
CN0009	1	Socket connector Plug-in 130 series 6 poles, p=5mm			Imo - Plugin 20.130/6
	1	Pin Strip for socket connector			Imo - Plugin 20.130/PS
	2	AWG16 (1.5mm²),600V, 105°C, Orange wire L=70mm, UL AVLV2 [connecting CN0009 to mains switch]			CAEDATA FDC-UL1007.16

								3		AWG16 (1.5mm²),600V, 105°C, Grey wire L=70mm, UL AVLV2 [for connecting IMO connector to mains switch]			CAEDATA FDC-UL1007.16
								4		Faston connector female 4.8mm isolated, UL RFWV [fastening AWG16 on mains switch]			CEMBRE RF-F408P
								1		Cable ties 100x2.5mm			VARIOUS UL ZODZ2
L0009								1		Choke, Current compensated , 18mH, 1A			Schaffner - RN122-1/02
								1		Fuse Temporised temporised 3.15A low break			Schurter FST 0034-3125
								1		Metallic contact for CN0008			
Q2502-b								1		Insulator, aluminum oxide (Q2502) Regulator TO220, e=2.5mm			Bergquist - SL013AL25
R2528								1		Resistor Medium Power 2W	100	R	Neohm CFR200
U2601-b	U2604-b							2		Flexible insulator (with suitable insumating eyelet)			Warth K177
U2502								1		Positive Adjustable Voltage Regulator; 0°C-70°C, 2,5V-36V			Texas Instrument - TL431CLP
								1		Power cord 3x0.75 10/16amp straigth plug, black, 2m			Harvest electric Wire HE103 HP3 H03VV-F00075
										Insulating cover, LEXAN FR700, 430um			DEGLARGES ISOLANTS
										DC Fan UL GPWV2			Sunonwealth KDE1235PFB2-8
										Capacitors			
C1204 C2531 C1622	C1304 C2519 C1623	C1701 C1617 C1624	C1801 C1618	C1901 C1619	C2001 C1620	C2513 C1621		17		Capacitor, SMD, COG dielectric, 0805/1206 size, tol= 5%, rating 25Vmini	1	n	KEMET CxxxxC102JxGAC
C1212	C1213	C1310	C1311					4		Capacitor, SMD, COG dielectric, 0805/1206 size, tol= 1%, rating 25Vmini	1.5	n	KEMET CxxxxC152FxGAC
C1629	C1630	C1631	C1632	C2507				5		Capacitor, SMD, COG dielectric, 0805/1206 size, tol= 5%, rating 25Vmini	1.5	n	KEMET CxxxxC152JxGAC
C0021 C0028	C0022	C0023	C0024	C0025	C0026	C0027		8		Capacitor, Thru Hole, Miniature, rating=1000V, p=5,08mm tol 20%	1.5	n	BC components 2252 601 ..126
C1625	C1626	C1627	C1628					4		Capacitor, SMD, COG dielectric, 0805/1206 size, tol= 5%, rating 25Vmini	1.8	n	KEMET CxxxxC122JxGAC
C2532								1		Capacitor, Thru Hole, ceramic low loss class 2 rating 1000V	150	p	BC components 2252 601 ..116

C0011 C0018	C0012 C1414	C0013 C1415	C0014	C0015	C0016	C0017	10	Capacitor, Thru Hole, Polyester MKT Film Capacitor p=5,08mm tol 5%	2.2	n	Arcotronics R82EC1220xx5-J
C2510	C2520						2	Capacitor, Thru Hole, Polyester MKT Film Capacitor p=5mm tol 5%	100	n	Arcotronics R82EC3100xx7-J
C5309							1	Capacitor, Thru Hole, Polyester MKT Film Capacitor p=5mm tol 5%	4.7	n	Arcotronics R82EC1470xx5-J
C1001 C5110 C5204 C5306	C1511 C5111 C5205 C5311	C1512 C5112 C5206 C5312	C1517 C5113 C5207 C1501	C1518 C5201 C5401 C1502	C5108 C5202 C5402	C5109 C5203 C5403	29	Capacitor, SMD; X7R dielectric, 0805 size, tol= 5%, rating 100V	10	n	KEMET C0805C103J1RAC
C1205 C1306 C1637 C1807	C1206 C1307 C1638 C1906	C1207 C1308 C1706 C1907	C1208 C1407 C1707 C1908	C1209 C1408 C1708 C1909	C1210 C1427 C1709	C1305 C1428 C1806	32	Capacitor, SMD, X7R dielectric, 0805/1206 size, tol=5%, rating 50Vmini	47	n	KEMET CxxxxC473JxRAC
C1416 C1610 C5301 C2504	C1417 C1611 C5302 C5103	C1418 C1612 C5303 C5104	C1508 C1613 C5304 C5105	C1509 C1614 C5305 C5106	C1510 C1615 C2608	C1609 C1616 C2609	27	Capacitor, SMD, X7R dielectric, 1206 size, tol=5%mini, rating 50Vmini	100	n	KEMET C1206C104J5RAC
C1423	C1424	C1425	C1426				4	Capacitor, SMD; X7R dielectric, 1206 size, tolerance 5%, rating 50Vmini	220	n	KEMET C1206C224J5RAC
C5310							1	Capacitor, SMD; Y5V dielectric, 1206 size, tolerance 20%, rating 25V	470	n	KEMET C1206C474M3VAC
C5307	C5308						2	Capacitor, SMD, COG dielectric, 0805/1206 size, tol= 5%maxi, rating 25Vmini	22	p	KEMET CxxxxC220J2GAC

C1705	C1805	C1905	C2005	C5101	C5102		6	Capacitor, SMD, COG dielectric, 0805/1206 size, tol= 5%maxi, rating 25Vmini	33	p	KEMET CxxxxC330J2GAC
C1515	C1516						2	Capacitor, not connected	nc		
C1203 C1514 C1710	C1303 C5003 C1810	C1403 C5004 C1910	C1404 C1704 C2010	C1405 C1804 C1214	C1406 C1904 C1312	C1513 C2004	20	Capacitor, SMD, COG dielectric, 0805/1206 size, tol= 5%maxi, rating 25Vmini	100	p	KEMET CxxxxC101J2RAC
C5001	C5002						2	Capacitor, SMD, COG dielectric, 0805/1206 size, tol= 5%maxi, rating 25Vmini	220	p	KEMET CxxxxC221J2GAC
C2509	C2530	C0001	C0002	C0003	C0004		6	Capacitor, SMD, COG dielectric, 0805/1206 size, tol= 5%maxi, rating 25Vmini	470	p	KEMET CxxxxC471J2GAC
C0019	C0020						2	Capacitor, electrolytic, Radial, 50V, heigth=7mm, p=2.5mm	10	u	JAMICON SSR100M1HE7 ou LELON serie SE-SEA (en 50V)
C1211 C1636	C1309	C1401	C1402	C1633	C1634	C1635	8	Capacitor electrolytic Non Polar, 6x11, p=2.5mm, value=22UF, rating=35V	22	u	Nitai ou LELON serie RN -RNG marcon
C1409 C1505 C1605	C1410 C1506 C1606	C1411 C1507 C1607	C1412 C1601 C1608	C1413 C1602 C1639	C1429 C1603 C1640	C1430 C1604	20	Capacitor, electrolytic, Radial, 50V, heigth=?mm, p=?mm	22	u	ELGEN MI840022u-50V (JAMICON SSR220M1VE7 ou LELON serie SE-SEA (en 50V))
C1702 C2003	C1703	C1802	C1803	C1902	C1903	C2002	8	Capacitor electrolytic Non Polar, 13x25, p=5mm, value=470uF rating=35V (Nitai Case F)	470	u	Nitai ou LELON serie RN -RNG
C1201	C1202	C1301	C1302				4	Capacitor, electrolytic, Radial, 105°C, Very Low Impedance 470UF 25V (RVI136) d=10mm p=5mm	470	u	BC components 2222 13636471
C1419	C1420	C1421	C1422				4	Capacitor, Thru Hole, Electrolytic, Axial, 85°C, tolerance 20%, 10x18, rating 10V	1000	u	BC components 2222 02134102
							1	Capacitors NON CONNECTED			
								Connectors			
CN5002	CN5003						2	2.54mm x 2.54mm Box Header 3X2 contacts [link main board - RS232 board]			E-TEC SLS-006-S920-11
							2	Female connector 2.54mm 3x2 contacts [goes into CN5002 CN5003]			E-TEC IDS-006-S100-01/P

	1	⚠	Round Conductor Flat cable .050", 28AWG stranded, halogen free insulation, UL94V-0 (6cond), 80°C	any UL AVLV2
CN5501	1		DIP plug 2.54mm 7X2 for LCD screen ribbon cable	E-TEC IDP-014-S100-00
	1		Round Conductor Flat cable .050", 28AWG stranded, halogen free insulation, UL94V-0 (14cond)	3M 2010serie
	1		HE10 Transition for LCD ribbon	E-TEC IDS-014-S100-01/P
CN5001	1		.100" x .100" pin strip header 2X28 (no standard pin 1 identification)	KONTEK_intercomHE14_254
CN5201	1		2mm x 2mm pin strip header 2X7 (no standard pin 1 identification) for Xilinx Jtag	HARWIN_2mmPitch
CN5301	1		.100" x .100" pin strip header 2X6 (no standard pin 1 identification) for DSP Jtag	KONTEK_intercomHE14_254
CN0001	1	⚠	Sense Connector male	Wago231-468/001-000
CN5004	1		SUB-D9 Connector, PCB mounting, Turned solder pins, straight	HARTING 09 67 009 5654
CN0002 CN0003	2	⚠	XLR female receptacle	NEUTRIK NC3FBH2
CN0004 CN0005 CN0006 CN0007	4	⚠	XLR male receptacle	NEUTRIK NC3MBH
	1	⚠	Sense Connector female	WAGO 231-108/026-000
			Discrete	
L0001 L0002 L0003 L0004 L0005 L0006 L0007 L0008	8		Choke, EMI suppression, ferrirte core, AXIAL, 27uH, 10%	EPCOS B78108-T1273-K
D1207 D1208 D1209 D1307 D1308 D1309 D1401 D1402 D1403 D1404 D1405 D1406 D1407 D1408	14		Diode Small signal	Philips BAS85
D0001 D0002 D0003 D0004 D0005 D0006 D0007 D0008 D1201 D1202 D2510 D2511 D1301 D1302	14		Diode Small signal, high speed	Philips PMLL4148
D0009 D0010 D0011 D0012 D0013 D0014 D0015 D0016	8		Diode, TRANSIL, bidirectional, 18V	SGS-THOMSON SM6T18CA
D5001 D5002	2		Diode, TRISIL, bidirectional, 25V, 100A, Low capacitance	SM6T33CA
D0017 D0018	2		Diode, TRANSIL, unidirectional, 27V	SGS-THOMSON SM6T27A
D1409 D1410	2		Diode, Voltage regulator 3.3V	Philips BZV55C3V3

D1203 D1205 D1303 D1305 D2503	5		Diode, Voltage regulator 7.5V			Philips BZV55C7V5
D1204 D1206 D1304 D1306	4		Diode, Voltage regulator 8.2V			Philips BZV55C8V2
L1501	1		INDUCTANCE, Axial, VK200, material 4B1			Ferroxcube WBC2.5/SP-4B1
Q2504	1		MOS SMALL SIGNAL BST82			Philips PMBF170
Q1203 Q1303 Q1402	3		NPN Transistor PZT			Philips PZT2222A
Q1001 Q1201 Q1301 Q1401 Q2503	5		PNP Transistor PZT			PZT2907A
X5101	1		QUARTZ 11M2896, HC49			
X5301	1		QUARTZ 20Mhz, HC49			ACAL A473336613
Q1202 Q1302	2		Transistor Current mirror PNP			Philips BCV62C
Q1204 Q1304	2		Transistor, Current mirror PNP			Philips BCV61C
			Optoelectronic			
LED5501 LED5502 LED5503 LED5504	4		PANEL INDICATOR, 1 LED			
LED5505	1		PANEL INDICATOR, 2 LEDS			
LED5506 LED5507 LED5508 LED5509	4		PANEL INDICATOR, 3 LEDS			
	1		LCD 16*2 Characters STN transflective/Negative 85 x 30 x 13mm, LED Amber backligth, PCB v-0, 105°			
			Trimmer and knobs			
SW5501 SW5502 SW5503 SW5504 SW5506 SW5507 SW5508	7		TACT SWITCH			ITT KSL0V410
VR5501	1		Potentiometer, carbon, 10mm, tol=20%, value=10k	10	K	PIHER PT10LH05103A2020
VR5502	1		TRIMMER NON CONNECTED			
SW5505	1		Rotary encoder horizontal, 16mm, 24 pulses, with detent, shaft 25mm			ALPS EC16B24202F25
			Analogue Ics			
U1201 U1301	2		Differential Line Receiver -6dB			Burr Brown INA137UA
U1202 U1203 U1302 U1404 U1603 U1604 U1703 U1903	8		Operational Amplifier, Bipolar, Dual, Low Noise, Low power, High Ouput current			Motorola MC33078D
U1502	1		Operational Amplifier, Dual Low Power, Single Supply, case SO8			TEXAS INST. TLC082CD
U1204 U1401 U1402 U1701 U1801 U1901 U2001	7		Operational Amplifier, High performance, Low noise, Dual, DIP8			NJM2114D

U1501						1	Operational Amplifier, Quad, Low Power, Single Supply, case=SO14	On Semiconductor MC33174D
						Digital Ics		
U5106						1	5-pin Microprocessor Supervisory Circuit	MAXIM MAX824LEUK-T
U1505						1	74AHCT74 Dual D-type Flip Flop with set and reset, positive-edge trigger, case=SO14	Philips 74AHCT74
U5401	U5402					2	74HC191 Presettable synchronous 4 bit binary up/down counter, case=SO16	Philips 74HC191M1R
U5202	U5203	U5204				3	74HCT273 Octal D-Type Flip Flops with clear, case=SO20	74HCT273
U5103						1	74HCT373 Octal D-type latch 3-STATE, case=SO20	Philips 74HCT373D
U5205	U5206	U5403				3	74HCT377 Octal D-Type Flip Flops with clock enable, case=SO20	Philips 74HCT377D
U5207						1	74HCT541 Octal Buffer & line driver with 3 state output, case=SO20	Philips 74HCT541D
U1503	U1504					2	Converter, A to D, 18-bit 48kHz	Crystal CS5330A-KS
U1403						1	Converter, A to D, 24-bit 192kHz	AKM AK5394A
U1601	U1602					2	Converter, D to A, 24-bit, 96kHz	AKM AK4393
U5201						1	CPLD Xilinx XC9536 in PLCC44	XILINX XC9536-15PC44C
U5301						1	DSP 56303 24-Bit General-Purpose Digital Signal Processor	
U5105						1	Flash memory, 2Megabit (256K x 8), 90ns, 5-volt only, CMOS, PLCC32	ATMEL AT29C020-90JC
U5101						1	Microcontroller TS80C32X2 (second footprint with Harwin D830)	TS80C32X2
U1205	U1303	U1702	U1802	U1902	U2002	6	Multiplexer 8-channel Analog DG408, case=SOIC	Vishay Intersil DG408DY
U1506						1	74AHCT00 Quadruple 2-input positive-NAND gate, case=SO14	74AHCT00
U5107						1	74HCT00 Quadruple 2-input positive-NAND gate, case=SO15	74HCT01
U5302						1	SRAM, CMOS, Very Low Power, 128k*8, CMOS SOP32	BSI BS62LV1024SC-70
U5104						1	SRAM, CMOS, Very low Power, 32k*8, 70ns	Cypress CY62256-70SNC
RL1001	RL1002					2	RELAY DPDT OMRON G5V-2	Omrom G5V-2
U5102						1	RS232 ransceiver with 0.1uF external capacitors	MAXIM MAX202ECSE / IN202ECB
TST1201	TST1202	TST1601	TST1203	TST1204				
TST1301	TST1302	TST1303	TST1401	TST1402				
TST1403	TST1404	TST1602	TST1603	TST1604		33	Thru Hole Mount test point Multipupose (hole 1.6mm diam.)	Keystone 5010
TST1605	TST2501	TST2502	TST2503	TST2504				
TST2505	TST							
						Resistors		

R0005	R0006	R0007	R0008	R0009	R0010	R0011	8	Resistor metal film (SFR25), thru hole tol=1%	330	R
R0012										
R2513							1	Resistor Medium Power 3W	33	K
R2532	R2534						2	Resistor Medium Power 3W	270	R
R1221	R1222	R1321	R1322	R1603	R1604	R1606	58	Resistor Metal film 1/4W tol 1%, case 1206 or 0805	1	K
R1608	R1609	R1610	R1612	R1614	R1615	R1616				
R1618	R1620	R1621	R1622	R1624	R1626	R1409				
R1410	R1411	R1412	R1413	R1414						
R1706	R1806	R1906	R2006				4	Resistor Metal film 1/4W tol 1%, case 1206 or 0805	8.87	K
R1715	R1716	R1815	R1915	R2015			4	Resistor Metal film 1/4W tol 1%, case 1206 or 0805	12.4	K
R1212	R1312	R1714	R1814	R1914	R2014		6	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	1.05	K
R1002							1	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	1.2	K
R1211	R1311	R1713	R1813	R1913	R2013		6	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	1.47	K
R1001							1	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	1.8	K
R1210	R1310	R1712	R1812	R1912	R2012		6	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	2.05	K
R2507	R2522	R2609	R2611				4	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	2.74	K
R1209	R1309	R1711	R1811	R1911	R2011		6	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	2.87	K
R2505							1	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	3.3	K
R2509	R1627	R1628	R1629	R1630			5	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	825	R
R2524							1	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	3.92	K
							0	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	4.42	K

R1702 R1805 R2004	R1703 R1902 R2005	R1704 R1903	R1705 R1904	R1802 R1905	R1803 R2002	R1804 R2003	16	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	4.64	K
R1427 R1514	R1428 R1515	R1509 R1516	R1510	R1511	R1512	R1513	10	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	4.7	K
R2503							1	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	5.6	K
R1717	R1817	R1917	R2017				4	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	9.76	K
R1631 R1308 R5205 R1401 R1408	R1632 R2527 R5206 R1402 R1522	R1633 R5101 R5207 R1403	R1634 R5201 R5302 R1404	R0013 R5202 R5303 R1405	R0014 R5203 R5501 R1406	R1208 R5204 R5502 R1407	32	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	10	K
R1521							1	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	11	K
R1716	R1816	R1916	R2016				4	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	11.5	K
R2506							1	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	16.9	K
R1201	R1301						2	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	20	K
R0015 R1910	R0016 R2009	R1709 R2010	R1710 R1205	R1809 R1206	R1810 R1305	R1909 R1306	14	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	100	K
R2504	R2515						2	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	180	K
R1501 R1508	R1502	R1503	R1504	R1505	R1506	R1507	8	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	1000	K

R2501	R2502						2	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	560	K
R5301							1	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	681	K
R1722	R1822	R1922	R2022				4	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	750	K
R2525	R2526						2	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	1	M
R2510	R2511						2	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	220	R
R1419 R1426	R1420 R1601	R1421 R1602	R1422 R2512	R1423	R1424	R1425	11	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	10	R
R1707 R2008	R1708	R1807	R1808	R1907	R1908	R2007	8	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	15	R
R2514							1	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	22.1	R
R5001 R0022	R5002 R0023	R2523 R0024	R0018 R0025	R0019	R0020	R0021	11	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206	100	R
R1517	R1518	R1519	R1520				4	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	150	R
R2520							1	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	180	R
R2601	R2608	R2610					3	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	243	R
R5503 R5510 R5517	R5504 R5511 R5518	R5505 R5512 R5519	R5506 R5513 R5520	R5507 R5514	R5508 R5515	R5509 R5516	18	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	332	R
R1215	R1315	R1720	R1820	R1920	R2020		6	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	365	R
R2602							1	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	390	R
R1523	R1524	R5003	R5004				4	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	470	R
R1214	R1314	R1719	R1819	R1919	R2019		6	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	511	R
R1213	R1313	R1718	R1818	R1918	R2018		6	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	715	R

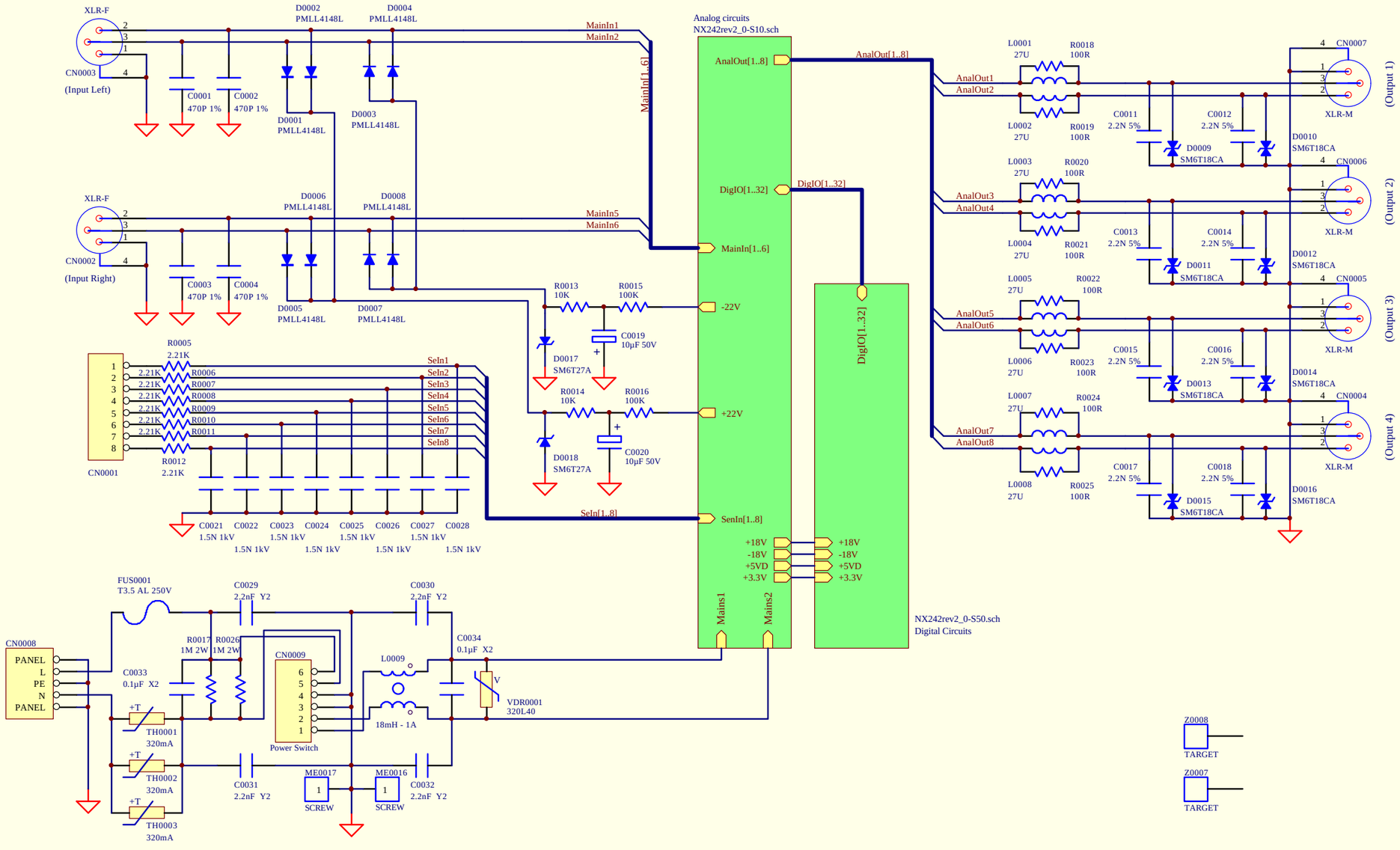
	0	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	820 R
R1216 R1316 R1721 R1821 R1921 R2021	6	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	909 R
R2521	5	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	22.6 K
R1218 R1219 R1318 R1319	4	Resistor Metal film, SMD, 1/4W, tol =1%, case 1206-0805	150 K
R1204 R1304	2	Resistor Metal film, SMD, 1W, tol =5%, case 1218	3.3 K
R2612 R2613 R2614 R2615 R2616 R2617 R2618 R2619	8	Resistor Metal film, 1/4W, tol =1%, case 1206	1 R
R2517 R2518 R2519	3	Resistor Metal film, Thru hole, 1/4W, tol =1%	1.21 R
R2603 R2604 R2605 R2606 R2607 R2529 R2530 R2533 R1525 R1526	10	Resistors, NON CONNECTED	
Z2501 Z2502 Z2503 Z2504 Z2505 Z2601 Z2602 Z2603 Z2604 Z2605 Z2606 Z2607 Z5101 Z5301	14	SHUNT	

Metal Box

ME0004 ME0006 ME0008 ME0010	4	Broaching Type Standoffs, M3 12mm, (expansion board)	PEM KFE-M3-12ET
ME0001 ME0002 ME0003 ME0005 ME0007 ME0009 ME0011 ME0012 ME0013 ME0014	10	Broaching Type Standoffs, M3 4mm, (PCB - Metal)	PEM KFE-M3-4ET
	0	Metal rear panel	
	0	Metal : Bracket for encoding wheel	
	1	Metal complete BOX	
	2	Rack ears middle	
	2	Insulating Washer for M3 screws (LCD screen)	
	3	washer, Serrated lock, DIN6798A for M3 screws, externally thoothed. Material : spring steel, zinc plated. Hardness 350-425 HV.	BOSSARD BN781
	17	Screw, Socket button head cap, M3x5, ISO7380, property class 10.9, steel, Black (front panel, back panel)	Bossard BN19

12	Hexalobular (TORX) flat head thread forming screws 3x6 DIN7500, steel case hardened, 450HV0.3 (Top lid)	Bossard BN11288
6	Socket button head cap screws M4x8, ISO7380, property class 10.9, steel/// CHB M4*8 (for Rack ears)	Bossard BN19
11	Socket button head cap screws M3x5, ISO7380, property class 10.9, steel /// Screw M3*5 (PCB)	BOSSARD BN781
1	Silk screen Painting rear panel	SERCATT
1	Front panel : two color complete	Martin technologie

Schematics



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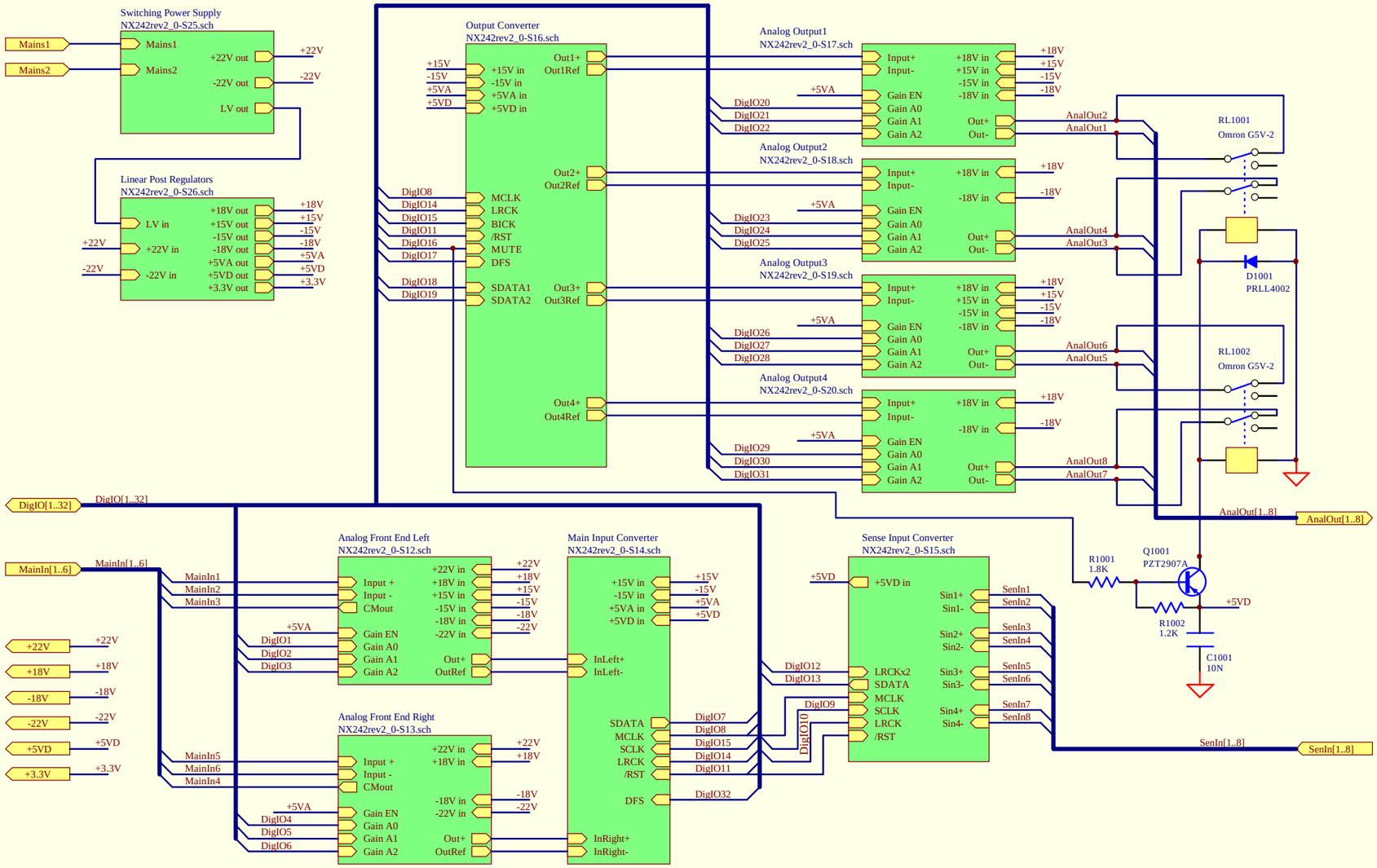
Excem
12, chemin des Hauts de Clairefontaine
78580 MAULE FRANCE
http://www.excem.fr mailto:info@excem.fr
tel: 01 34 75 13 65 fax: 01 34 75 13 66
tel int: +33134751365 fax int: +33134751366

Client :	**NEXO**
Fichier :	NX242rev2_0-S00.sch
Auteur :	Frédéric Broydé
Numéro de dessin :	**0409230101**
Date :	6-Oct-2004
Feuille :	**1** / **19**



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Excem
12, chemin des Hauts de Clairefontaine
78580 MAULE FRANCE
http://www.excem.fr mailto:info@excem.fr
tel: 01 34 75 13 65 fax: 01 34 75 13 66
tel int: +33134751365 fax int: +33134751366

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Date :	6-Oct-2004
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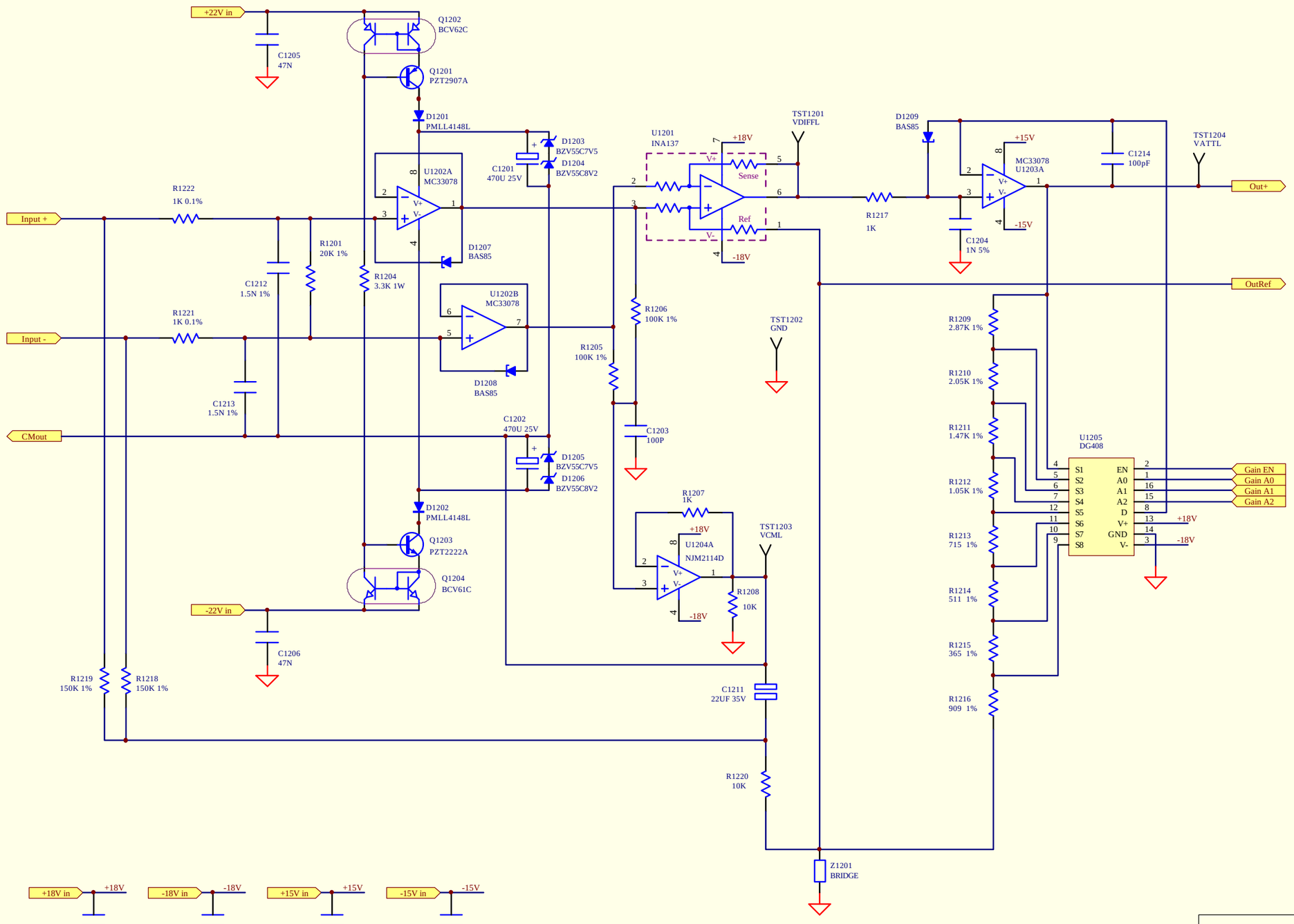

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Excem
12, chemin des Hauts de Clairefontaine
78580 MAULE FRANCE
http://www.excem.fr mailto:info@excem.fr
tel: 01 34 75 13 65 fax: 01 34 75 13 66
tel int: +33134751365 fax int: +33134751366

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Auteur :	Frédéric Broydé
Numéro de dessin :	**0409230104**
Date :	6-Oct-2004
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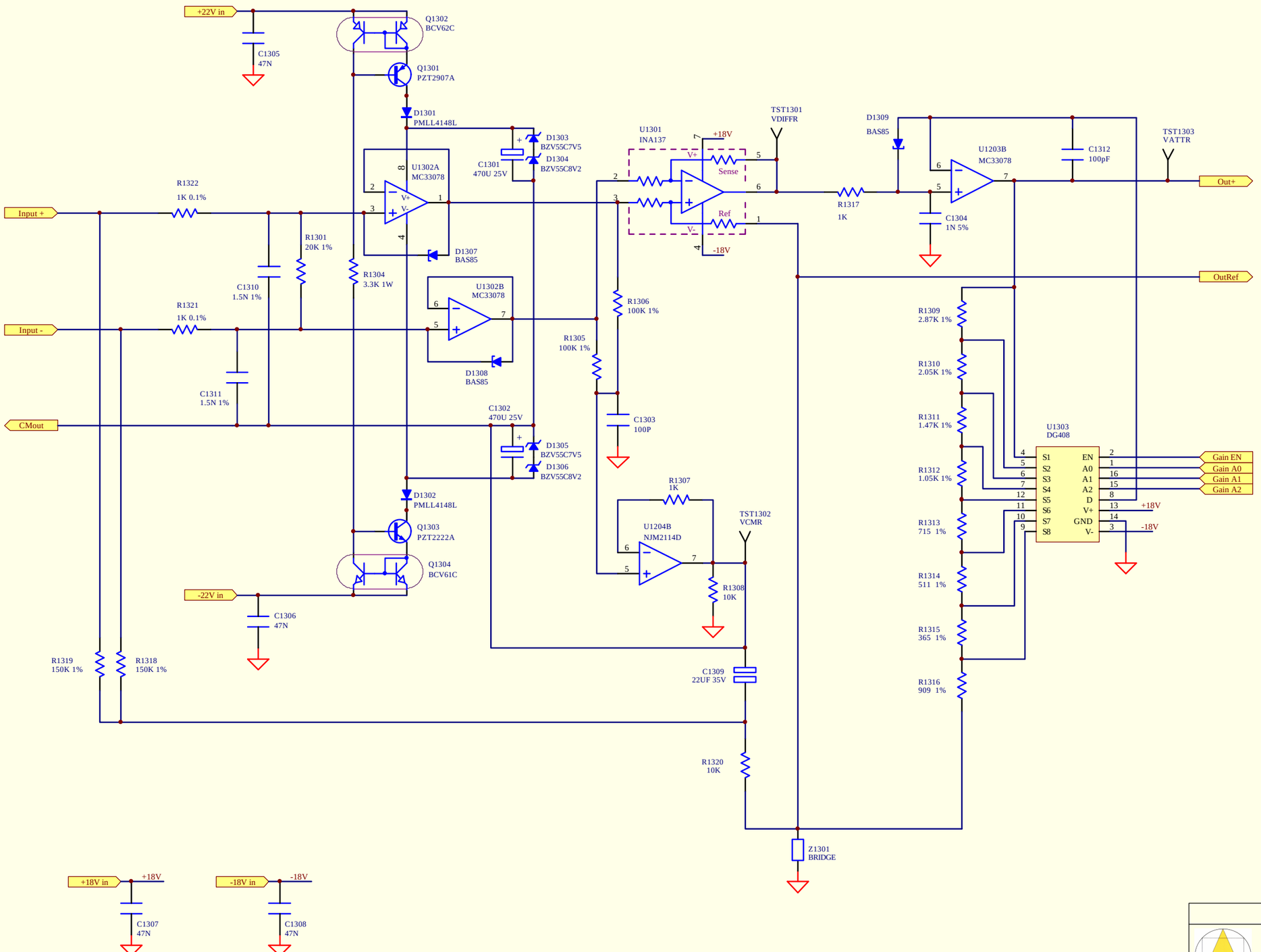

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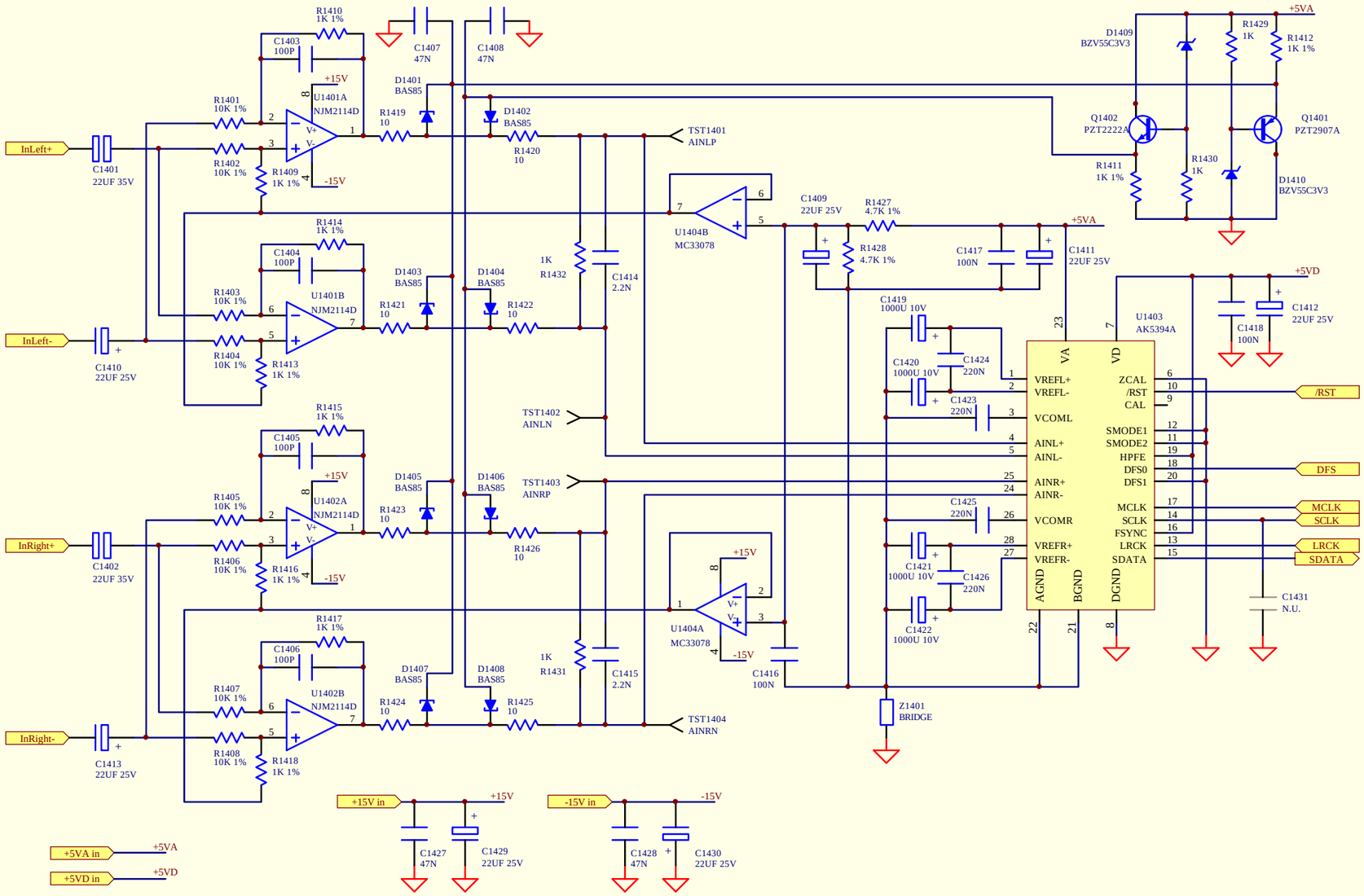
Excem
12, chemin des Hauts de Clairefontaine
78580 MAULE FRANCE
http://www.excem.fr mailto:info@excem.fr
tel: 01 34 75 13 65 fax: 01 34 75 13 66
tel int: +33134751365 fax int: +33134751366

Client :	**NEXO**
Fichier :	NX242rev2_0-S13.sch
Auteur :	Frédéric Broydé
Numéro de dessin :	**0409230105**
Date :	6-Oct-2004
Feuille :	**5** / **19**



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Excem
12, chemin des Hauts de Clairefontaine
78580 MAULE FRANCE
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tel: 01 34 75 13 65 fax: 01 34 75 13 66
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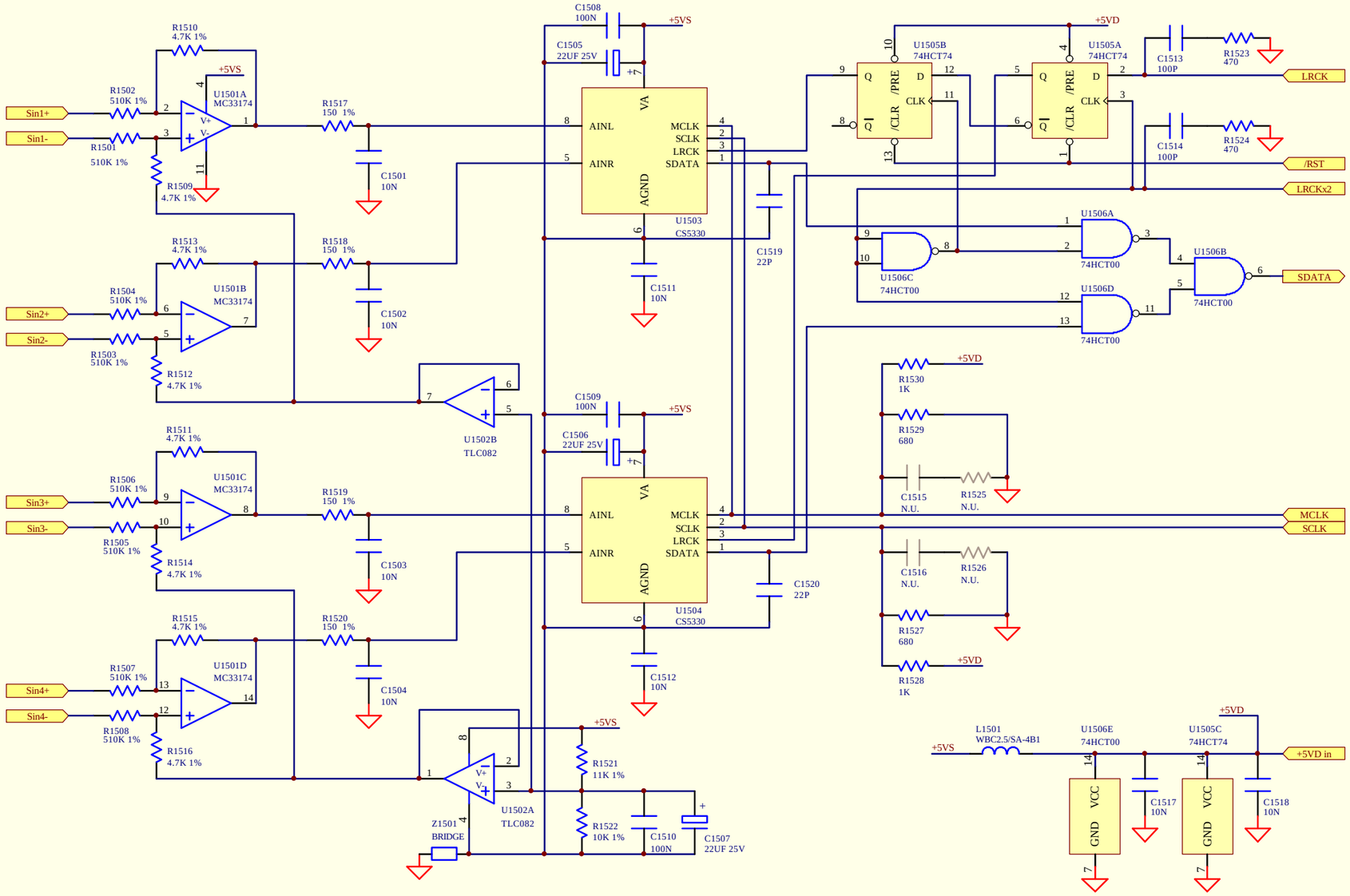
Fichier :	NX242rev2_0-S14.sch
Auteur :	Frédéric Broydé
Numéro de dessin :	**0409230106**
Date :	6-Oct-2004
Feuille :	**6** / **19**



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tel int: +33134751365 fax int: +33134751366

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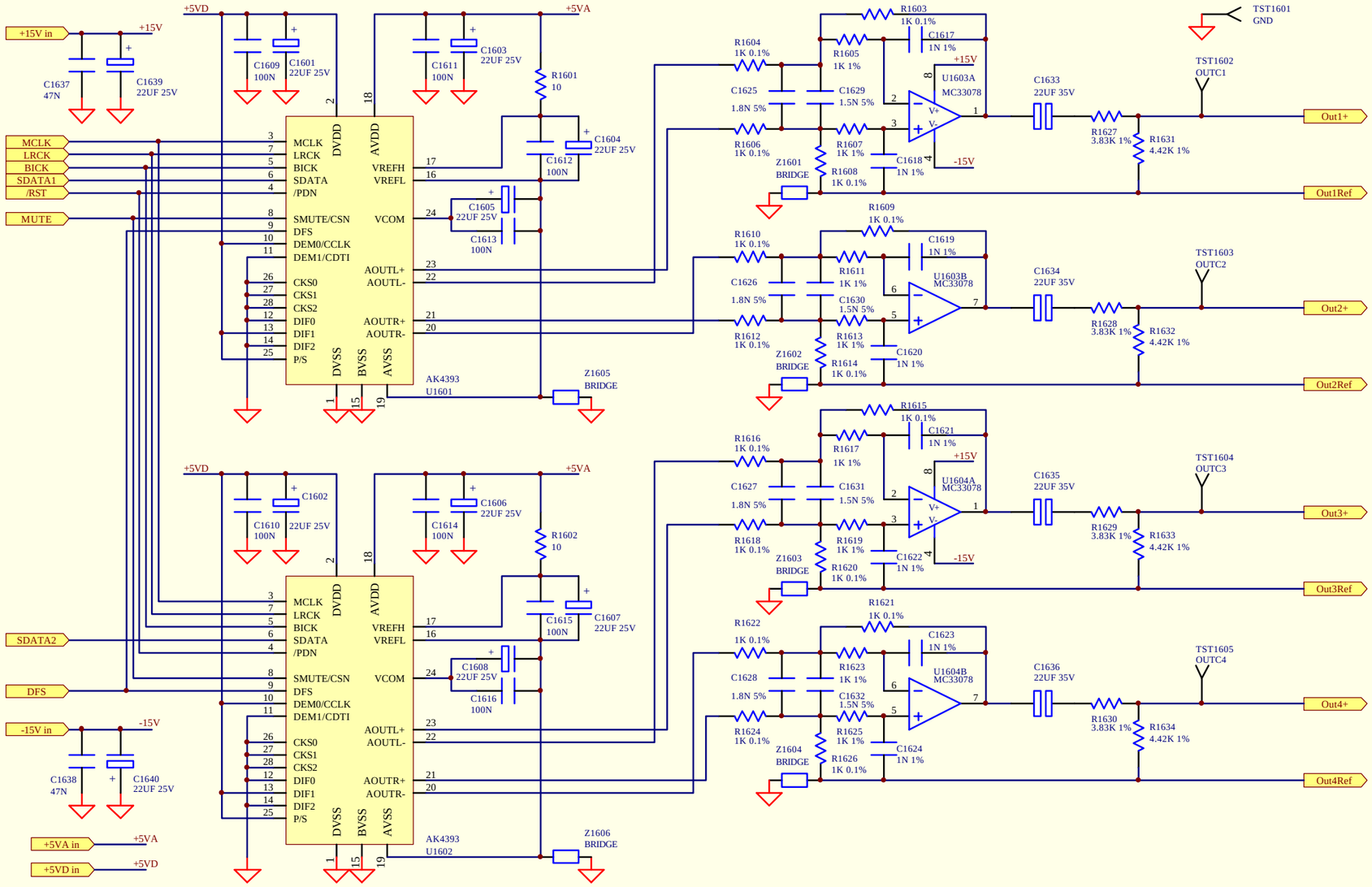
Fichier :	NX242rev2_0-S15.sch
Auteur :	Frédéric Broydé
Numéro de dessin :	**0409230107**
Date :	6-Oct-2004
Feuille :	**7** / **19**



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NX242 TDcontroller (revision 1)

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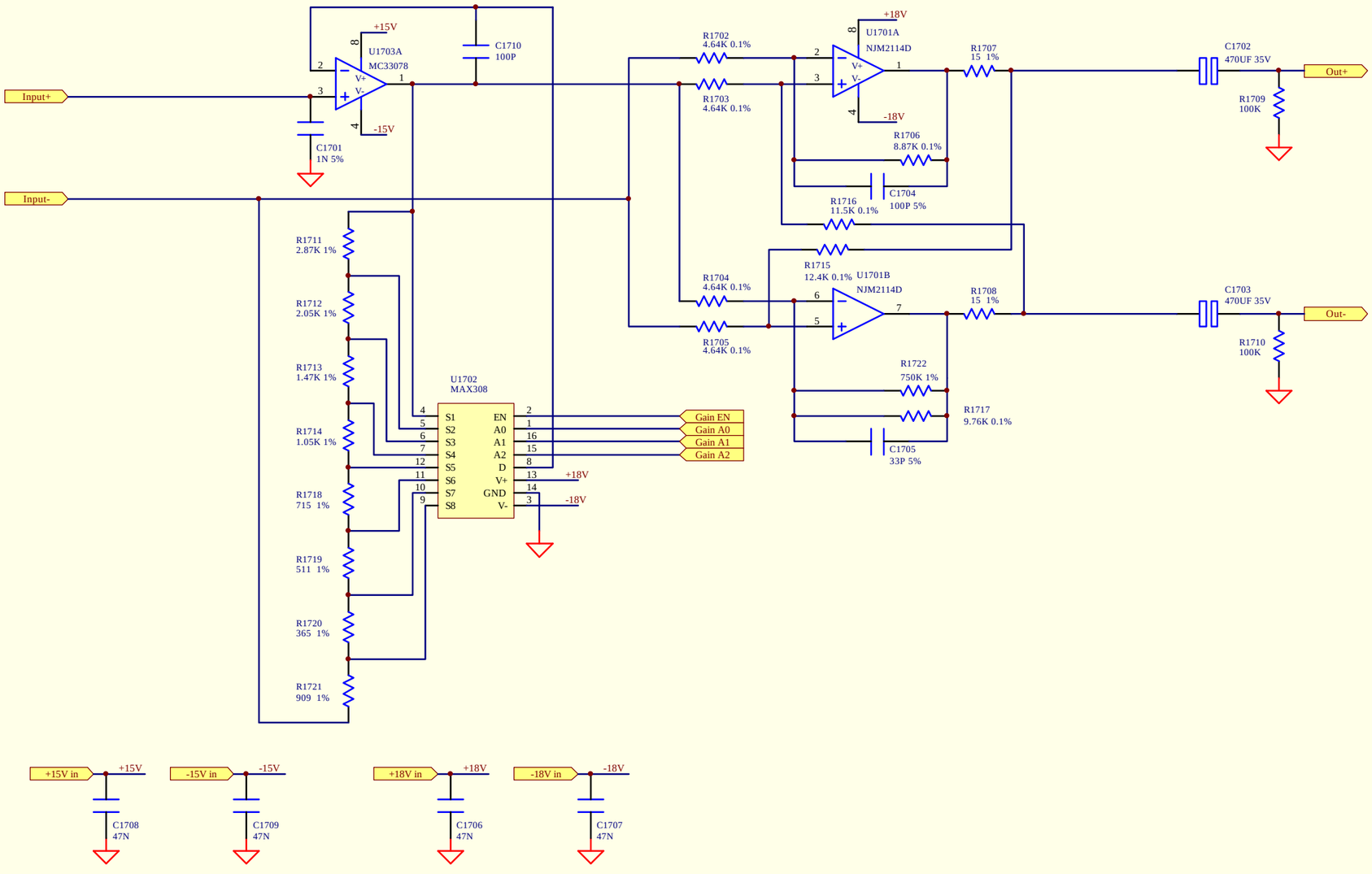
tel int: +33134751365 fax int: +33134751366

Client :	NEXO
Fichier :	NX242rev2_0-S16.sch
Auteur :	Frédéric Broydé
Numéro de dessin :	0409230108
Date :	6-Oct-2004
Feuille :	8 / 19



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NX242 TDcontroller (revision 1)		
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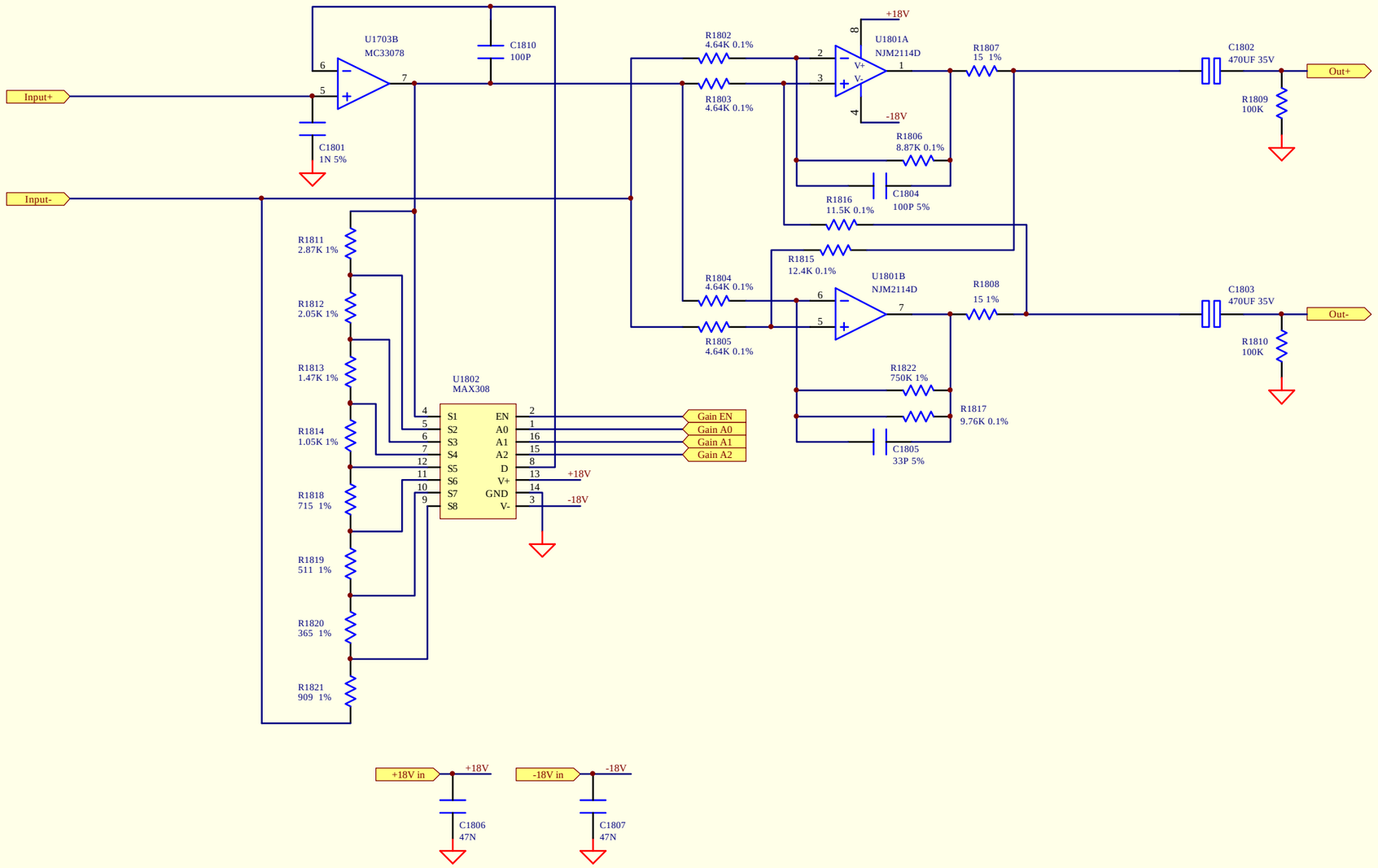
	Fichier :	NX242rev2_0-S17.sch
	Auteur :	Frédéric Broydé
	Numéro de dessin :	**0409230109**
	Date :	6-Oct-2004
	Feuille :	**9** / **19**



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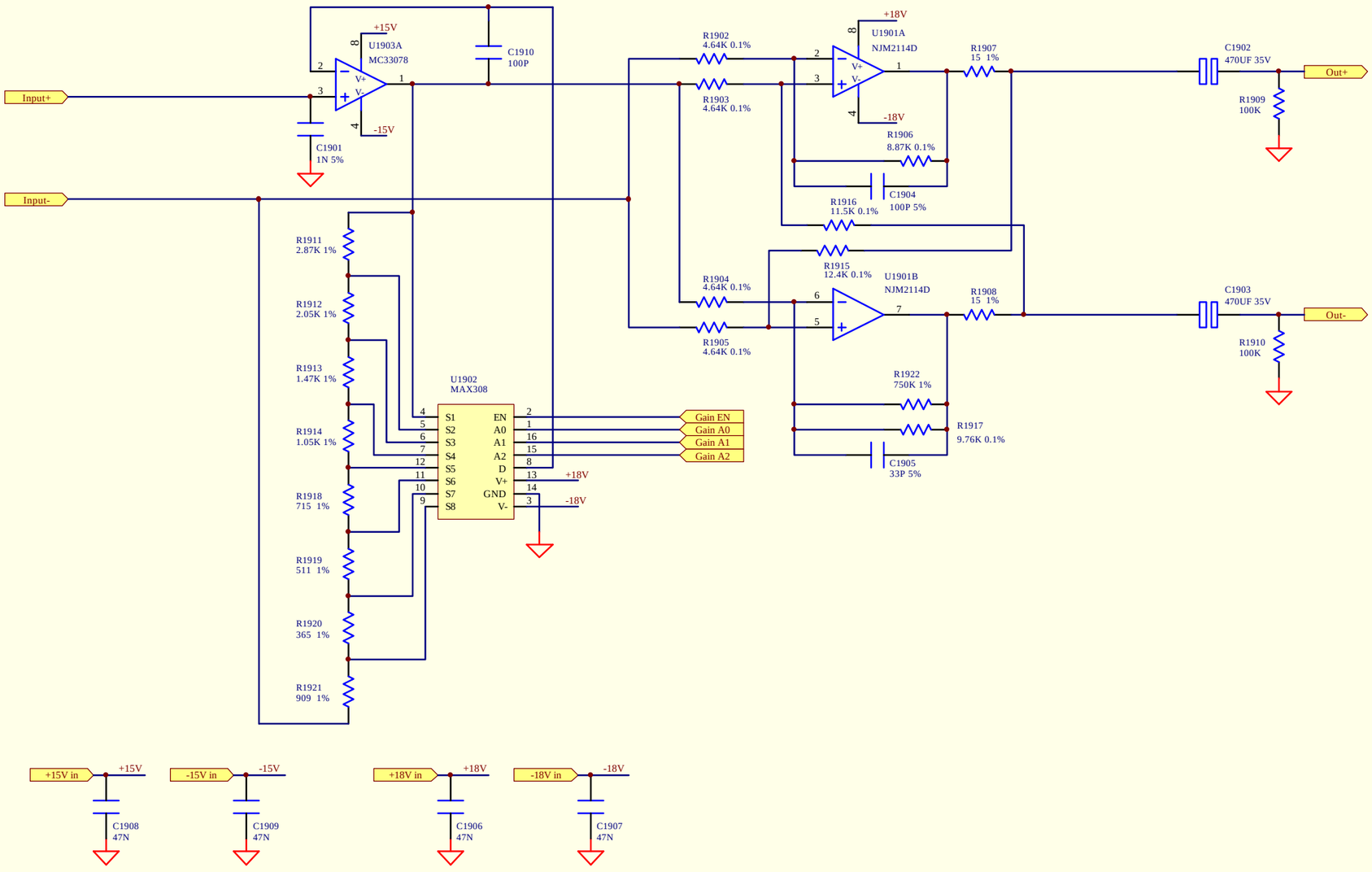
Fichier :	NX242rev2_0-S18.sch
Auteur :	Frédéric Broydé
Numéro de dessin :	**0409230110**
Date :	6-Oct-2004
Feuille :	**10** / **19**



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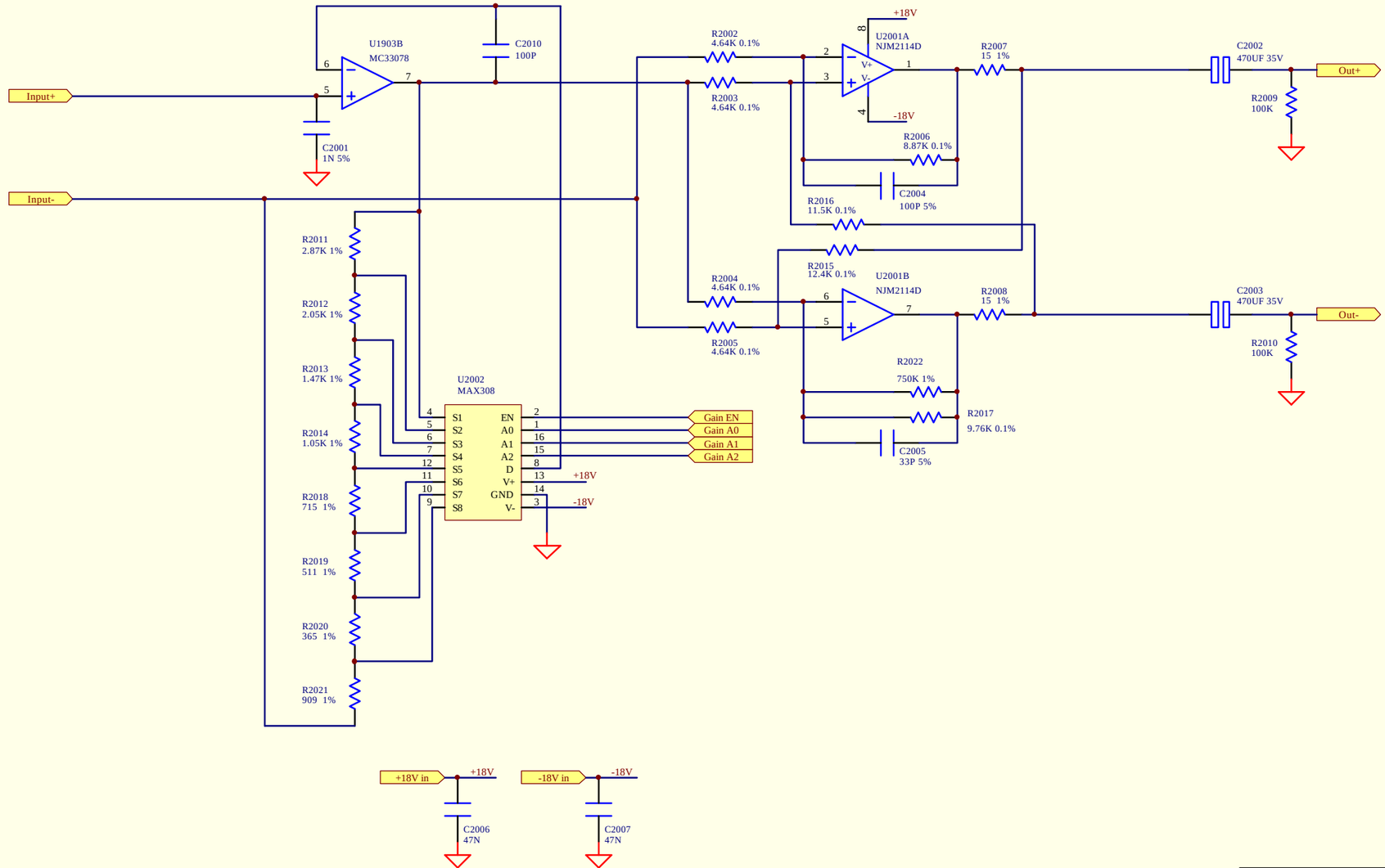
Client :	**NEXO**
Fichier :	NX242rev2_0-S19.sch
Auteur :	Frédéric Broydé
Numéro de dessin :	**0409230111**
Date :	6-Oct-2004
Feuille :	**11** / **19**



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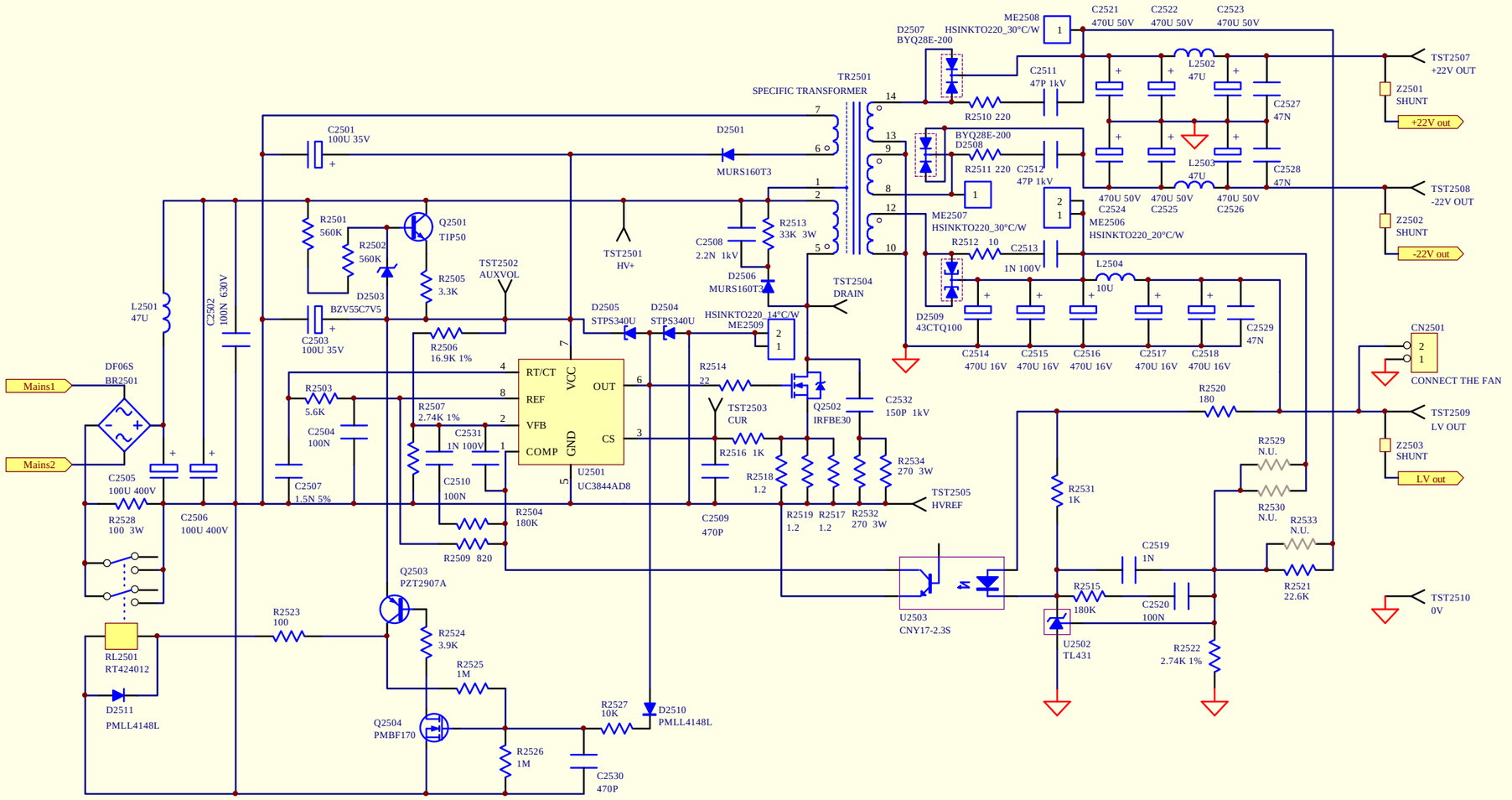
Client :	**NEXO**
Fichier :	NX242rev2_0-S20.sch
Auteur :	Frédéric Broydé
Numéro de dessin :	**0409230112**
Date :	6-Oct-2004
Feuille :	**12** / **19**



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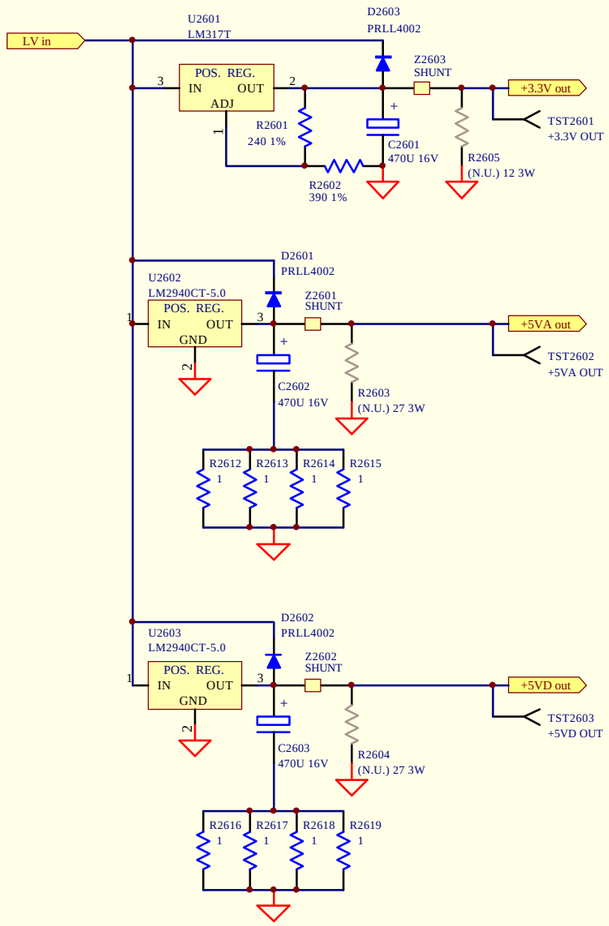
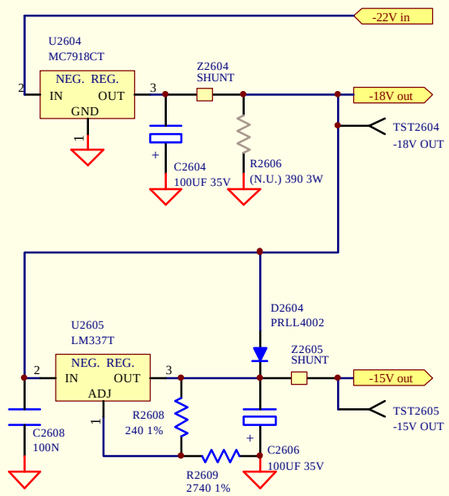
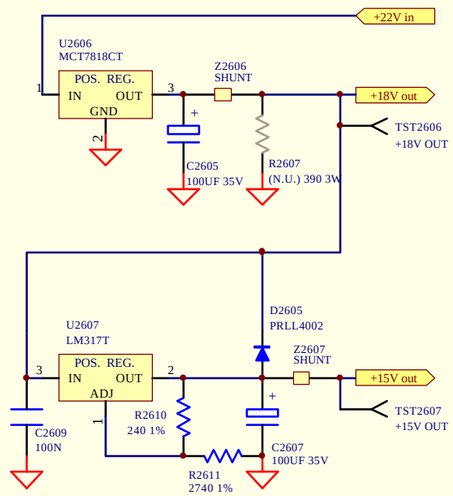
Client :	**NEXO**
Fichier :	NX242rev2_0-S25.sch
Auteur :	Frédéric Broydé
Numéro de dessin :	**0409230113**
Date :	6-Oct-2004
Feuille :	**13** / **19**

Note 1: resistors R2603 to R2607 shall not be installed on production boards: they are only intended for design tests.







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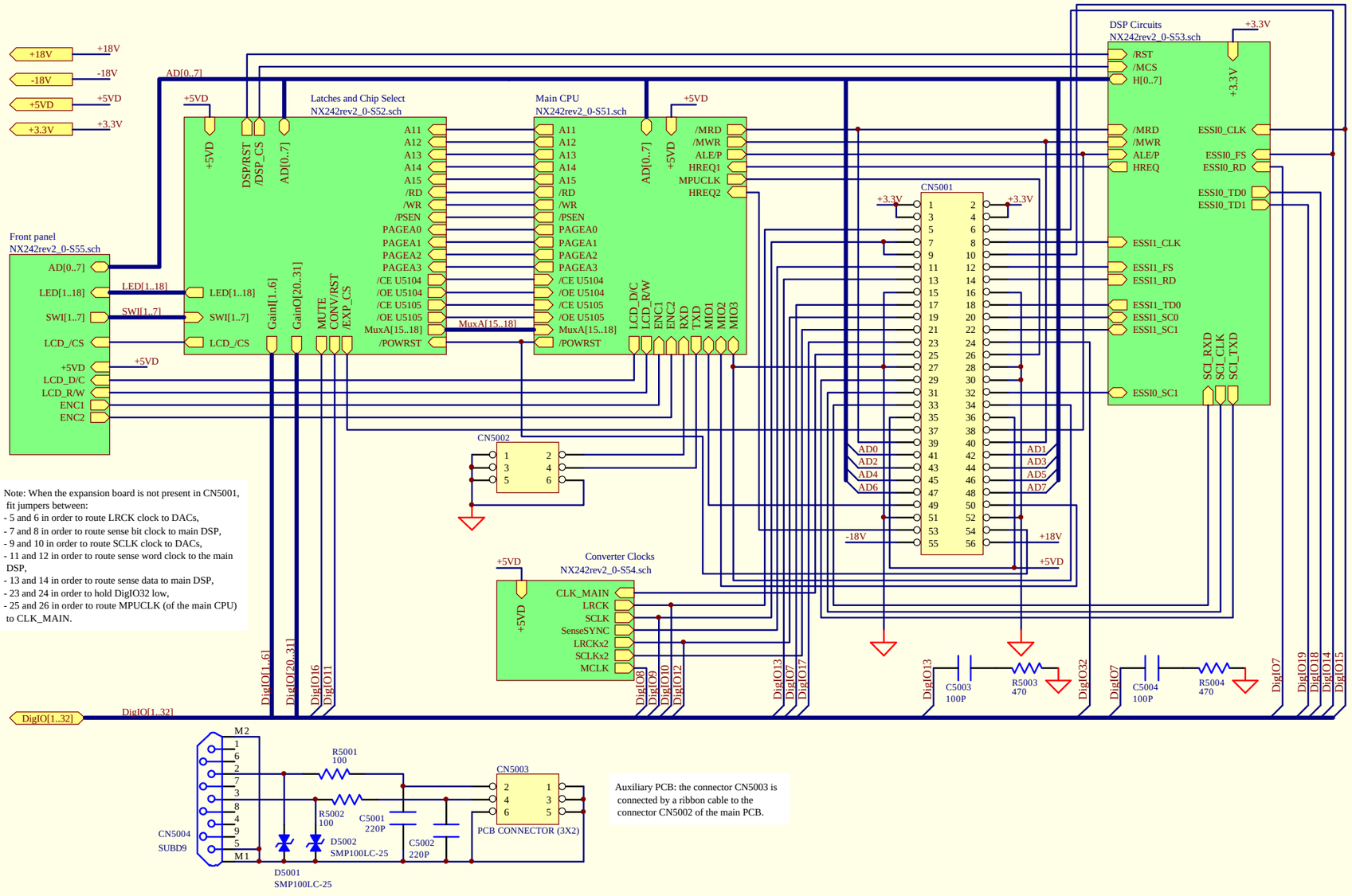
Client :	NEXO
Fichier :	NX242rev2_0-S26.sch
Auteur :	Frédéric Broydé
Numéro de dessin :	0409230114
Date :	6-Oct-2004
Feuille :	14 / 19


+18V
-18V
+5VD
+3.3V
AD[0..7]
Latches and Chip Select
NX242rev2_0-S52.sch
Main CPU
NX242rev2_0-S51.sch
DSP Circuits
NX242rev2_0-S53.sch
Front panel
NX242rev2_0-S55.sch
CN5001
CN5002
CN5003
CN5004
SUBD9
PCB CONNECTOR (3X2)
Converter Clocks
NX242rev2_0-S54.sch
DigIO[1..32]
R5001 100
R5002 100
R5003 470
R5004 470
C5001 220P
C5002 220P
C5003 100P
C5004 100P
D5001 SMP100LC-25
D5002 SMP100LC-25
Note: When the expansion board is not present in CN5001, fit jumpers between:
- 5 and 6 in order to route LRCK clock to DACs,
- 7 and 8 in order to route sense bit clock to main DSP,
- 9 and 10 in order to route SCLK clock to DACs,
- 11 and 12 in order to route sense word clock to the main DSP,
- 13 and 14 in order to route sense data to main DSP,
- 23 and 24 in order to hold DigIO32 low,
- 25 and 26 in order to route MPUCLK (of the main CPU) to CLK_MAIN.
Auxiliary PCB: the connector CN5003 is connected by a ribbon cable to the connector CN5002 of the main PCB.

Page :

NX242 TDcontroller (revision 1)

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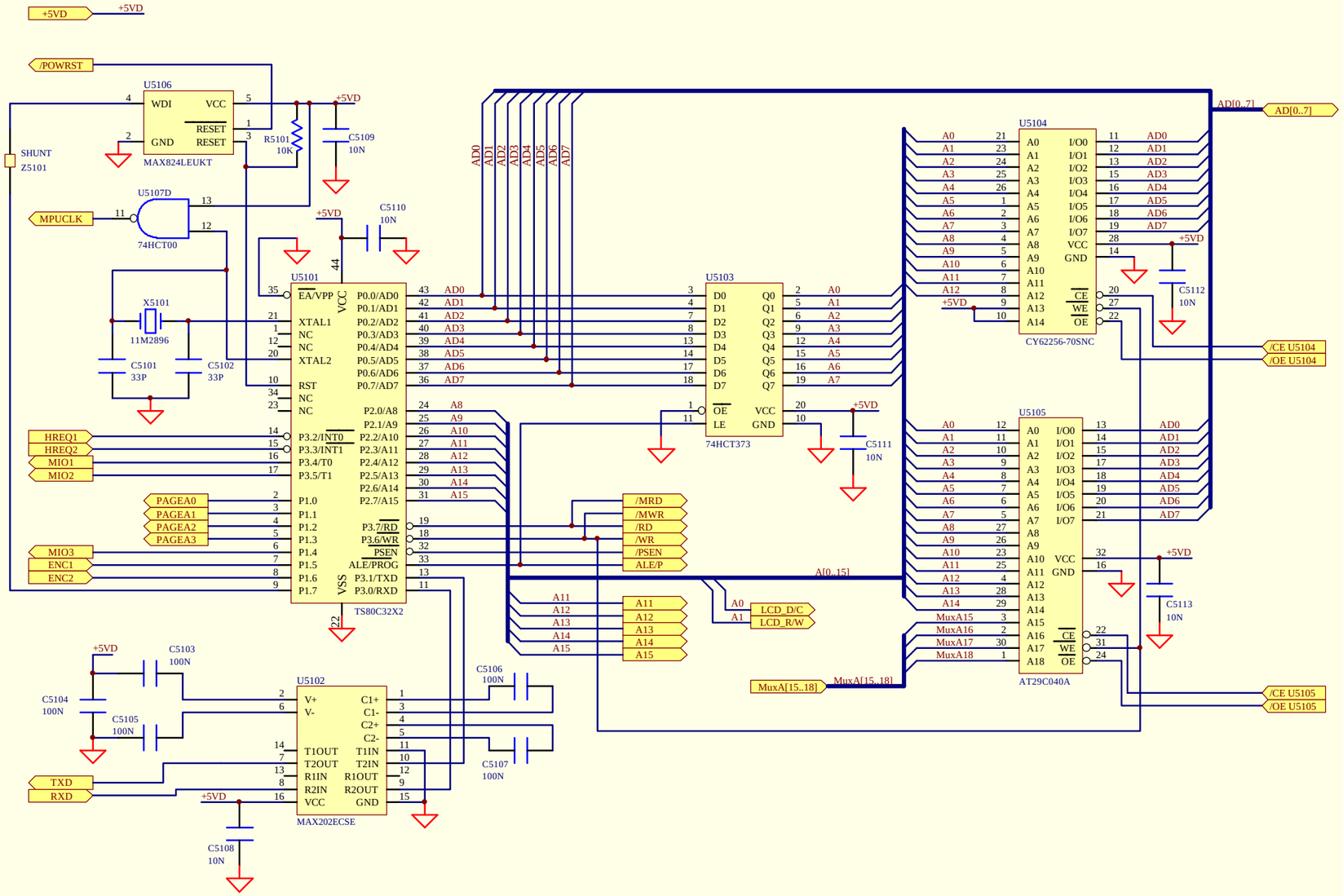
Client :	NEXO
Fichier :	NX242rev2_0-S50.Sch
Auteur :	Frédéric Broydé
Numéro de dessin :	0409230103
Date :	6-Oct-2004
Feuille :	3 / 19



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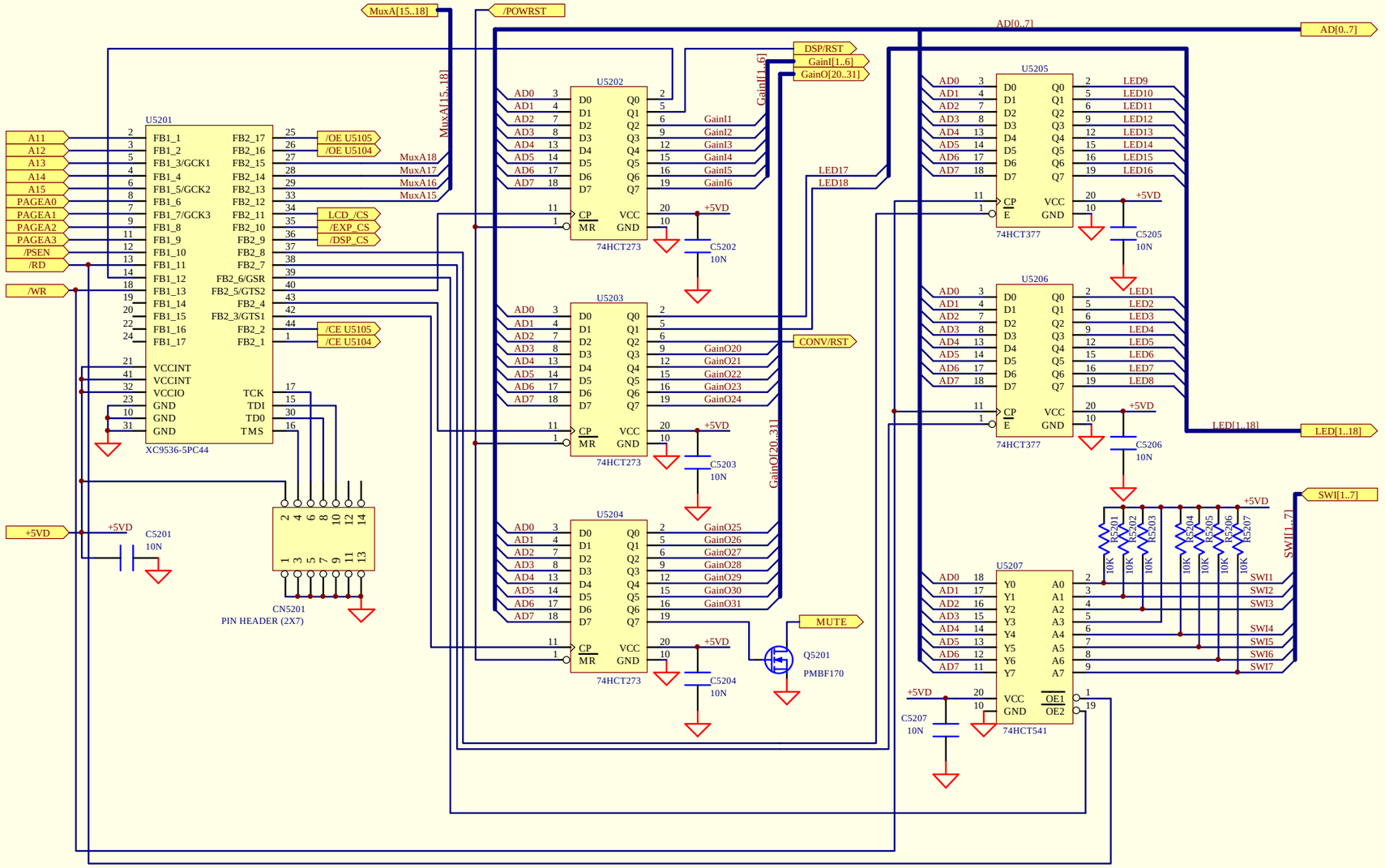
Client :	NEXO
Fichier :	NX242rev2_0-S51.Sch
Auteur :	Frédéric Broydé
Numéro de dessin :	0409230115
Date :	6-Oct-2004
Feuille :	15 / 19



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	Fichier :	NX242rev2_0-S52.Sch
	Auteur :	Frédéric Broydé
	Numéro de dessin :	**0409230116**
	Date :	6-Oct-2004
	Feuille :	**16** / **19**

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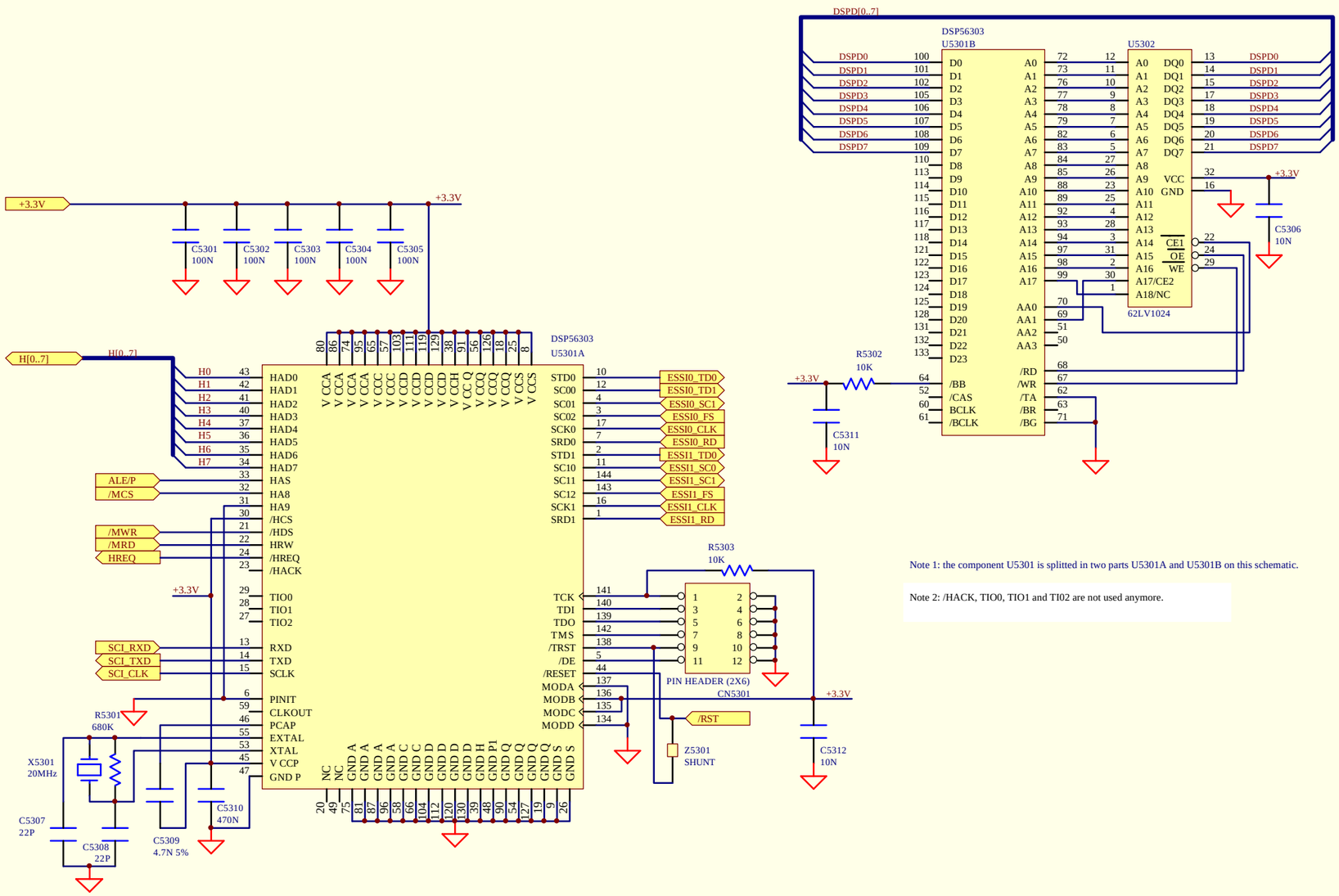

Note 1: the component U5301 is splitted in two parts U5301A and U5301B on this schematic.

Note 2: /HACK, TIO0, TIO1 and TI02 are not used anymore.

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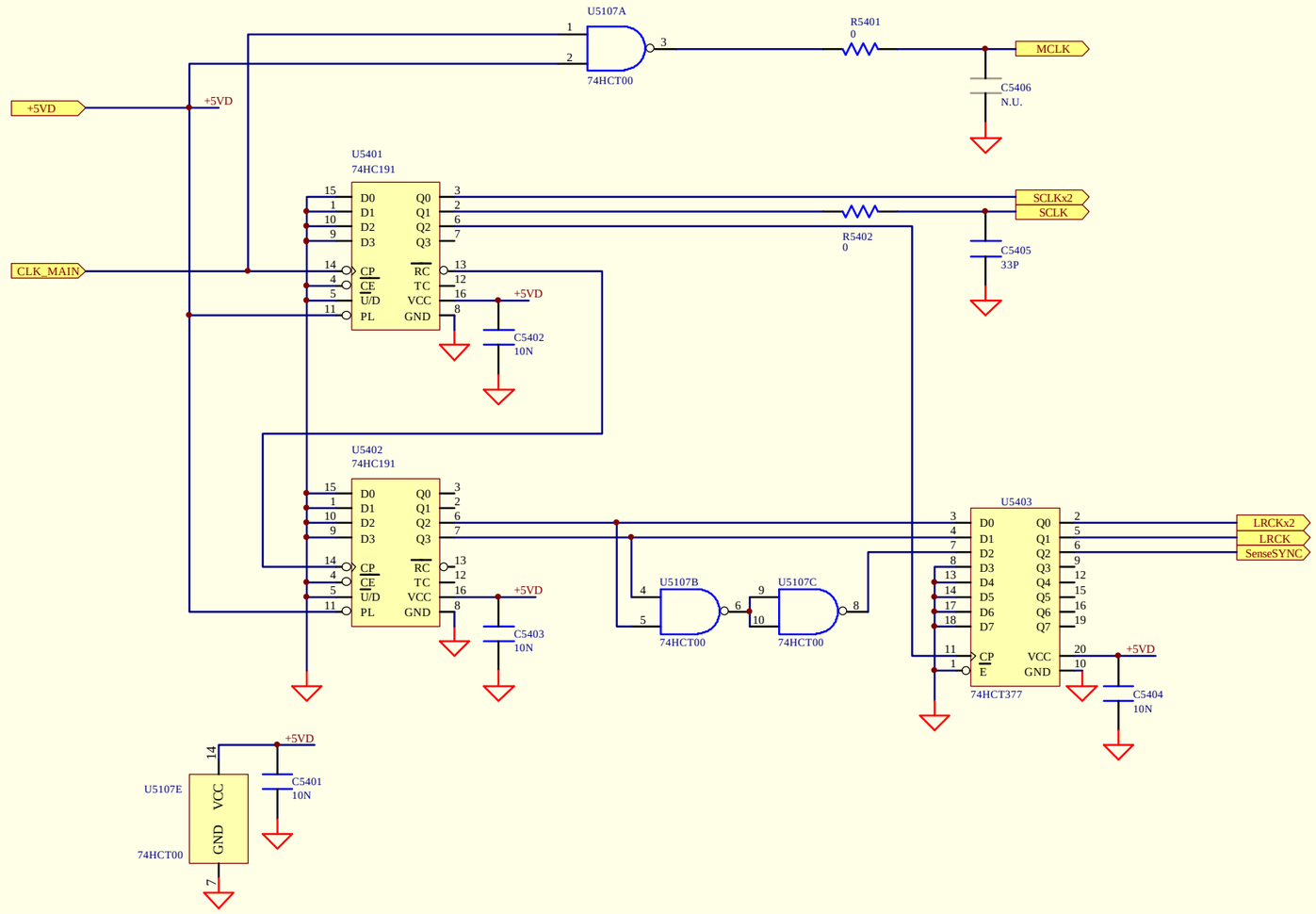
Client :	NEXO
Fichier :	NX242rev2_0-S53.Sch
Auteur :	Frédéric Broydé
Numéro de dessin :	0409230117
Date :	6-Oct-2004
Feuille :	17 / 19



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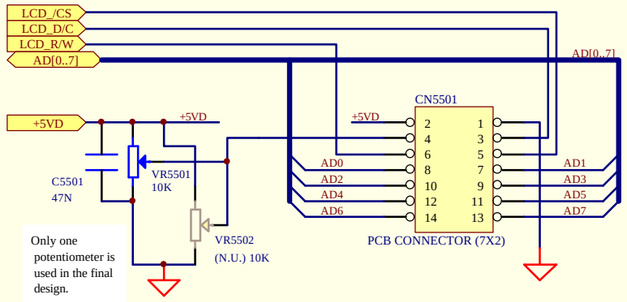
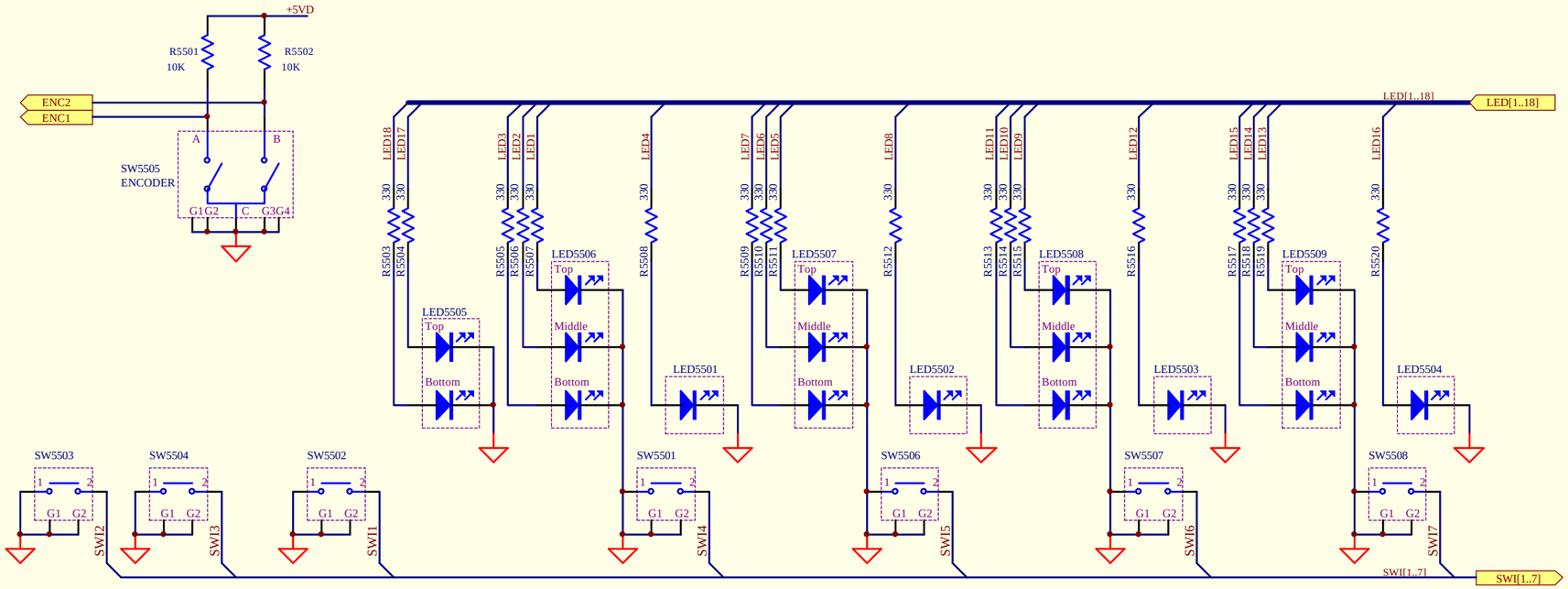
Client :	**NEXO**
Fichier :	NX242rev2_0-S54.Sch
Auteur :	Frédéric Broydé
Numéro de dessin :	**0409230118**
Date :	6-Oct-2004
Feuille :	**18** / **19**





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tel int: +33134751365 fax int: +33134751366

Client :	**NEXO**
Fichier :	NX242rev2_0-S55.sch
Auteur :	Frédéric Broydé
Numéro de dessin :	**0409230119**
Date :	6-Oct-2004
Feuille :	**19** / **19**

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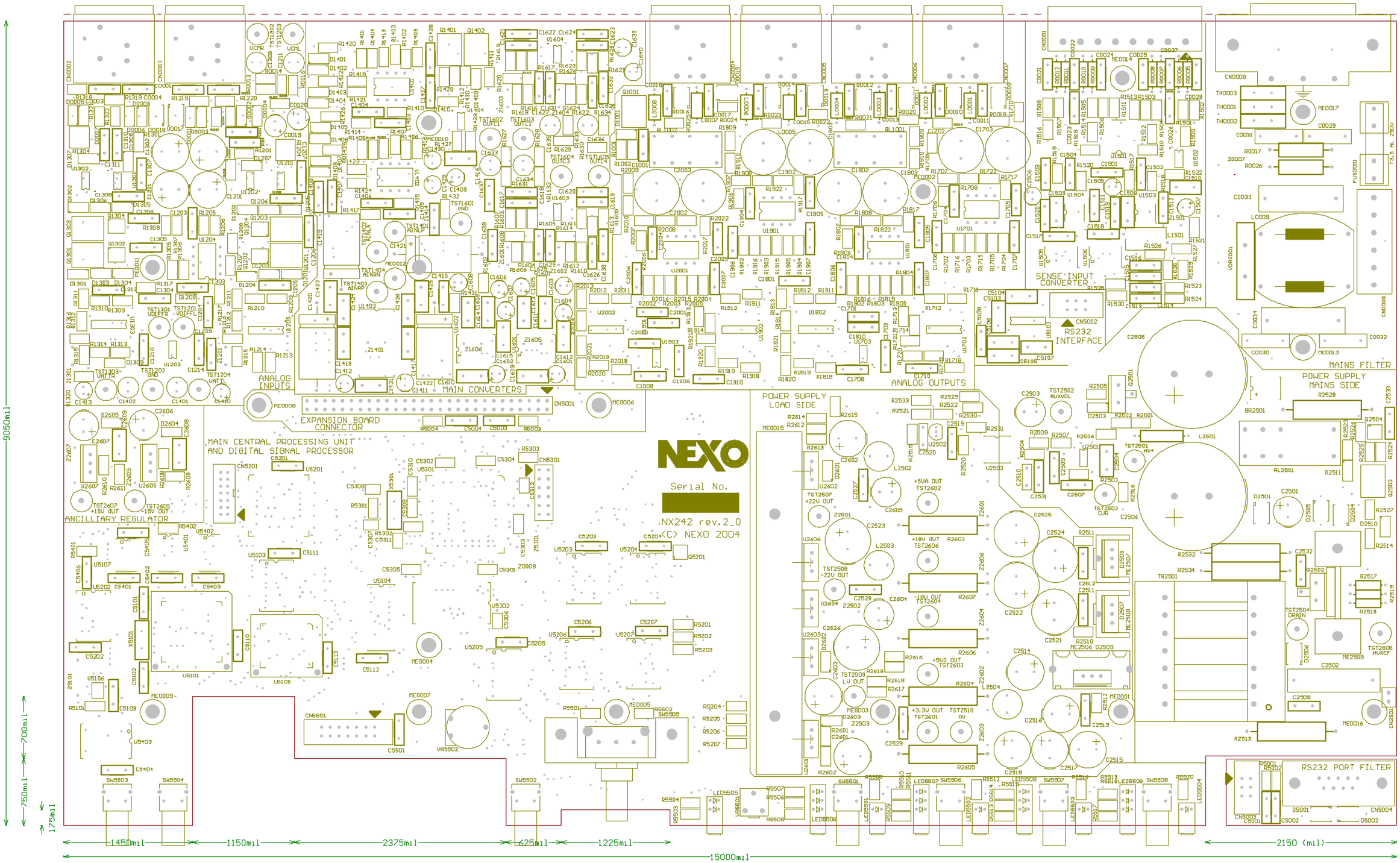

Mechanical information on NX242

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12, chemin des Hauts de Clairefontaine
78580 MAULE FRANCE
http://www.excem.fr mailto:info@excem.fr
tel: 01 34 75 13 65 fax: 01 34 75 13 66
tel int:+33134751365 fax int:+33134751366

CLIENT: Nexo
FILE NAME: NX242rev2_0.PCB
AUTEUR: Frédéric Broydé
DATE: 1-Oct-2004
COUCHE:

Z0003

France

Nexo S.A.
154 allée des Erables
ZAC des PARIS NORD II
B.P. 50107
F-95950 Roissy CDG
Cedex
Tel: +33 1 48 63 19 14
Fax: +33 1 48 63 24 61
e-mail: info@nexo.fr

USA

Nexo USA Inc.
2165 Francisco Boulevard
Suite E2
San Rafael CA 94901
Tel: +1 415 482 6600
Fax: +1 415 482 6110
e-mail: info@nexo.cc

LatAM

Nexo Latin America
Hualfin 1054
1424 Capital Federal
Argentina
Tel +54 114 432 1911
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